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JOURNAL *of* EDUCATIONAL RESEARCH

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ACCELERATION THE HARD WAY*

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Ohio State University

Editor's note: Acceleration is not new in American Education, but the war has presented new problems and possibilities particularly at the college and university level. The author presents data upon this subject for one of our large state universities.

ACCELERATED programs have now been available long enough in American colleges that some indication as to the extent to which students are using these programs, and the satisfactoriness of them, can be obtained. The present paper reports certain data bearing on these questions, from one large state university. The figures show something as to how these programs worked in the first year and a half after Pearl Harbor. But more practically important, they offer suggestions as to desirable further developments in present and in post-war American education.

THE AMOUNT OF ACCELERATION

The first question is: how many students did actually use accelerated programs to get themselves through college in a shorter time than usual; and how much was the time taken for a college education reduced? The following simple table shows elapsed time from entrance to the obtaining of a bachelors degree for all students who took all their college work at the Ohio State University, and who graduated from the colleges of Agriculture, Arts, Commerce, Education, and Engineering in the school year 1941–42 (the summer and autumn quarters of 1941 and winter and spring quarters of 1942) and in the school year 1942–3. Table I shows percents of the total number of students, each year, who finished their work in the designated times.

* The paper reports one of a series of studies of acceleration being made by the Bureau of Educational Research of the Ohio State University.

TABLE I

ELAPSED TIME, ENTRANCE TO GRADUATION

	3 and under	Years and months								Over		
		3-3	3-6	3-9	4-0	4-3	4-6	4-9	5-0	5	tot.	med.
1941-2	1%	1	3	50	10	6	6	10	2	11	1122	4-0
1942-3	2%	2	29	31	10	5	7	3	3	8	1030	3-11

Graduates in 1941–2 had little opportunity to take advantage of war-time accelerated programs. The table shows that only 5% of them finished under the "regular" time—three years and nine months after entrance or graduation the third June after entrance for those who entered in September. Exactly half or 50 percent "lock-stepped" through in the conventional four academic years, although the flexible quarter system presumably made it easy for good students to move faster by attending a fourth quarter. However, 45 percent took longer than the regular curricula call for. In fact, 3 percent took 7 years or more to obtain their undergraduate degrees. Data not included in this paper show that all this was quite typical of pre-war years. The influence of the four-year convention was very strong, even in a big state university in a large city and with the quarter system. To go faster than the regular pace just wasn't done. But the strength of the four year convention undoubtedly meant that the many who took more than the conventional time were often distressed and did not fit well with the "regular" crowd.

Students graduating in the school year 1942–3 had up to a year and a half in which to take advantage of war-time means for acceleration. The table shows that 33 percent of them did finish under the regular time. However, only 4 percent gained more than the one quarter which might be had simply by attending in the summer of '42. There was a reduction of 3 percent in number taking over five calendar years. But many continued at the usual pace. And for the total thousand students, median time from entrance to graduation was only one month less than for the previous year.

The above figures are for all five colleges combined, and for both men and women. Analysis shows no college in 1941–2 with over 8 percent of its students finishing under the "regular" time; engineering had none. In 1942–3, the colleges varied from 18 percent finishing in less than the conventional period up to 46 percent and with 10 percent finishing two quarters or more under the "regular" time. These last high figures—for the college

of Arts and Sciences—indicate exceptional flexibility and willingness to adjust to the needs and abilities of students. Analysis by sex shows an increase from 5 percent to 40 percent for the men and 2 percent to 18 percent for the women. In other words, before the war, almost none of the conventional women accelerated, and comparatively few women of the class of 1942–3 did so. Most of the accelerates have been men, and they have accelerated under pressure of the draft.

So much for a rough over-all comparison between what might be called the last pre-acceleration and first accelerated graduating classes. The remainder of this paper will deal entirely with this last class, which had up to a year and a half under war-time accelerated programs. Many of these students in the class of 1942–3 nevertheless did not accelerate. Some used accelerated programs to avoid dropping behind as much as they would have otherwise; thus some finished in five years who would otherwise have taken five and a half. But 33 percent did complete a "four year" college program in less than the "regular" time. The remainder of this paper will present certain straight forward comparisons between these accelerated students (as thus defined) and the remaining 67 percent of the class of 1942–3 who took the "regular" time or more. Two questions will be asked. First, what methods were used by these accelerated students, to move faster than the "regular" rate? Second, what were the effects upon these students of this speed-up?

MEANS OF ACCELERATION

The natural first question is to the means for accelerating used by the 33 percent who finished in less than the conventional time. The following simple table shows the simplest and most important means, attending school an extra quarter, usually in the summer.

TABLE II

NUMBER OF SUMMER QUARTERS ATTENDED*

	None	1	2	3	Over 3	N	M
Accelerates	6	66	22	6	.....	335	1.5
Others	30	53	13	3	1	639	1.4

* 60 Spring Quarter 1943 Engineering College Graduates are not included.

As will be seen, about two-thirds of all the students attended at least one summer quarter. In many cases summer attendance was simply to make up failed work, to compensate for light schedules taken because of ill health or to earn money, or to make up for a quarter missed during the regular school year. But summer attendance was clearly more common with the accelerate group.

A second means of acceleration was to take more than the usual academic load. A very rough comparison is given in Table III. Since loads in the College of Engineering are distinctly heavier than in the other four colleges, this table deals only with students in Agriculture, Arts, Commerce, and Education. It shows that 11 percent of the accelerates took a course load which averaged to 18 class hours or more for their entire college career, as compared with 3 percent of the non-accelerates; median load of the accelerates was almost an hour heavier. However, most of these had from entrance been taking heavy academic loads; very few students accelerated by upping their loads after Pearl Harbor only.

TABLE III

AVERAGE LOAD FOR ENTIRE COLLEGE CAREER

	Under 14	14	15	16	17	18	Over 18	N	M
Accelerates	1%	4	14	43	26	8	3	252	16.7
Others	7%	11	36	32	10	2	1	558	15.9

A third available method of acceleration was to pass courses by examination; by faculty rule a student may request an examination in any course in lieu of taking it, and obtain credit for the course if he passes the examination with a grade of "B" or better. Clearly this is by far the most flexible method of all; a student with exceptional secondary school preparation in some subject, with knowledge of it because of travel or other special opportunity, or with ability and application sufficient for effective independent study, can thus advance himself academically without course-sitting. The following Table IV shows that 38 percent of the accelerated students and 16 percent of the others had some credit by examination. However, only 8 percent of the accelerated and 2 percent of the others had as much as ten credit-hours or more.

TABLE IV

NUMBERS OF HOURS CREDIT BY EXAMINATION

	0	1–5	6–10	11–15	Over 15	cases
Accelerated	72	14	6	4	4	335
Non-accelerated	84	11	3	1	1	639

Of the total 974 students for whom data in this matter were available 9 percent had credit in English, 6 percent in French, 3 percent Chemistry, and the rest were scattered. In short, except as a little credit was thus given to students entering with exceptional preparation in the three subjects mentioned, the method was of negligible importance—apparently as a result of faculty indifference or a hostility which discouraged students from asking for such examinations and made those given so difficult as to be almost impossible to pass.[1]

Review of the whole situation shows 63 percent of the acceleration to have been gained simply by attendance a fourth quarter, 4 percent by extra load only, and 1 percent by examination credit alone, while 32 percent of the accelerates used more than one method (usually including fourth quarter attendance). In short, most students accelerated "the hard way"—usually by going to school more unremittingly or occasionally by taking extra loads. Credit by examination, which will probably be the major method after the war of recognizing educational programs and experience in the service[2] contributed a little. And since acceleration was most often by attendance a fourth quarter, actual time in school was in most cases not shortened at all, as shown by the following table V.

However, 22 percent of the accelerates did take less than the regular twelve quarters in residence, and the 2 percent who finished in 8 or 9 quarters are notable.

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[1] French was the subject most using credit by examination and Arts the College most doing so; 35% of its students had such credit as compared with 21% for the total 974 graduates.

[2] See for instance Tyler, Ralph W., "Sound Credit for Military Experience," *Annals of the American Academy of Political and Social Sciences*, Vol. 231 (January, 1944), pp. 58–64.

TABLE V

NUMBER OF QUARTERS ATTENDED

	8	9	10	11	12	13	14	15	Over 15	N	M
Accelerates	1%	1	3	17	50	19	7	1	1	338	12.6
Others				2	34	34	14	8	8	639	13.4

RELATIONS OF ACCELERATION TO AGE, ABILITY, SCHOLARSHIP, AND SOCIAL ADJUSTMENT

Certain possible effects of acceleration (however brought about), and relationships to certain other factors, must now be considered. And it from now on seems profitable to differentiate, of those students who did not accelerate, those who finished in the "regular" time of three years and nine months or at most within four years (which for most students meant entering in September and graduating the third June thereafter or in the summer quarter following) from those who took at least into a fifth year and may be called retarded. Relationships to retardation can then also be differentiated. And critics cannot argue that any advantages found for the accelerates are due to a lowering of the comparison group by lumping in of inferior retarded students.

A most natural first question is as to age of graduation of these three groups. Table VI shows accelerates to be very slightly (three-tenths of a year) under regulars in median age, and retards appreciably older. The considerable number especially in the last group not obtaining a bachelors degree until 25 or over should be noted.

TABLE VI

AGE AT GRADUATION

	Under 20	20	21	22	23	24	Over 24	N	Median
Accelerates	1%	11	53	20	6	1	8	338	21.7
Regulars	1%	5	43	37	6	3	5	428	22.0
Retards			4	37	25	14	20	268	23.3

The Table VII below shows median ages of the three groups at entrance to have been almost exactly the same. It also shows the usual lockstep through elementary and secondary school (entrance at around six, a grade a year for twelve grades, and as a result college entrance at seventeen or eighteen). Only 3 percent get ahead of the lockstep, though about a fifth enter college older.

TABLE VII

AGE AT ENTRANCE TO COLLEGE

	Under 17	17	18	19	20	Over 20	N	Median
Accelerates	3%	35	42	9	3	8	338	18.3
Regulars	4%	29	47	10	4	6	427	18.4
Retards	3%	23	43	17	6	8	268	18.4

At entrance to the University all students are required to take a test of general ability—the Ohio College Association Test. The differences in medians between the three groups are not as great as might be expected. A few students (9 percent of the first group) who tested below the 50 percentile at entrance accelerated successfully, while 26 percent of the retards scored at or above the ninetieth percentile and presumably had ability sufficient that they might have accelerated.

TABLE VIII

PERCENTILE ON TEST OF GENERAL ABILITY

	0–9	10	20	30	40	50	60	70	80	90 Up	N	Median
Accelerates	------	1	------	4	4	7	12	13	16	43	338	85
Regulars	1	2	2	5	5	7	13	14	20	31	426	80
Retards	1	4	2	7	6	9	13	16	16	26	262	75

Next is shown the relation of acceleration and retardation to scholarship. The accelerates have a distinctly better academic average than the regulars, while the retards are poorer. This finding might be expected in view of the comparative ability at entrance of these three groups, as shown in the previous paragraph. However, when accelerates are paired with reg-

ular cases as regards age and ability at entrance a superiority remains—as will be reported shortly in a later paper. The data of Table IX, though not thus analyzed, at least indicate that the accelerates have not suffered academically from their acceleration, and that it is rather the retards who present problems of scholarship.

TABLE IX

FINAL CUMULATIVE P.H.R.*

	1.8	2.2	2.6	3.0	3.4 and Up	Cases	Median
Accelerates	5	30	30	23	12	338	2.78
Regulars	14	33	32	13	8	423	2.63
Retards	24	38	22	12	4	268	2.46

* Point-hour-ratio is grade-points divided by credit hours, a grade of "A" being 4 points, "B" 3, "C" 2, "D" 1, and "E" 0. A P. H. R. of at least 1.8 is required for graduation. The table shows that 5% of the accelerates had point-hour ratios at graduation from 1.8 through 2.19, and so on.

It is often argued that accelerates keep up only by sacrifice of recreation and participation in student activities, or at least that activities are so geared to the regular year that accelerates do not easily fit in. The student annuals for the past two years were therefore carefully gone over, for memberships in organizations and teams, or similar evidence of participation in activities, and also for evidences of leadership as shown by the holding of offices in organizations, or chairmanships of committees. The accelerates show the fewest not participating at all, and the retards the greatest number of non-participants and lowest median of memberships.

TABLE X

NUMBER OF MEMBERSHIPS OR ACTIVITIES

	0	1	2	3	4	5	Over 5	N	Median
Accelerates	13	23	17	13	12	5	17	338	2.8
Regulars	16	19	16	17	9	8	15	428	3.0
Retards	27	31	13	9	5	7	8	269	1.7

Of the accelerates, 25 percent had held some sort of office, as compared with 24 percent of the regulars and 15 percent of the retards. Certain possibly important factors here are of course not known. Many of the retards may

have been working part time, or have been interrupted in their schooling because of ill health or lack of money, and therefore found participation in activities difficult. But whatever the causes, the evidence is that the retards, not the accelerates, present problems of campus adjustment.

Finally extremes as regards acceleration were especially considered. The P.H.R. of 27 students finishing two quarters under the regular time was found to be 2.83, while 18 taking three years or less had a median P.H.R. of 3.20. The first group had 15 percent with no record of campus activities, and the second 33 percent. Apparently the faster they go, the better academic work they do! But more of the most accelerated were not in activities. The P.H.R. of 75 cases in two summers was 2.71 with 12 percent not in the activity record; for 20 in three summers the P.H.R.'s were 2.70 and only 5 percent not in activities. The P.H.R. of 42 students averaging 18 hours load or more (for the engineers 20 hours or more) throughout their college careers was 2.98 and 12 percent non-participants. The extremes in all these respects thus come out on the whole very well.

In short, the accelerates are a little younger than the other students, a little more able, better in scholarship, and as well adjusted socially. There is no evidence for anxiety about them. The "super-accelerates" do extra well academically, and reasonably well in activities. In all respects it is the retards who present problems.

MAKING ACCELERATION BETTER

This paper presents only preliminary and incompletely analyzed data. Later studies will re-survey the situation after accelerated programs have been in operation a longer time, and by pairing cases give a cleaner analysis. But it seemed important to get some appraisals—and presumably suggestions for improvement—as early as possible. The evidence is that acceleration "the hard way"—primarily by going to school four quarters instead of three—has worked reasonably well. But surely there must be less clumsy methods for acceleration. After Pearl Harbor, American industry increased production not primarily by shortening vacations and lengthening working hours, but by improved or new methods. Surely improvements are possible in American higher education. Stream-lined army and industrial training programs, and experiments now going forward in certain colleges, should suggest such advances. Surely real progress can best be made by seeking

improved methods, rather than simply continuing wearily in present accelerated programs (more exactly described as longer-school-year programs), and passing resolutions favoring return to the "normalcy" of pre-war education as soon as the emergency is over. Then, many returning service men will need certain forms of accelerated programs. The student body will be greatly increased and very heterogeneous. And American higher education will have need, as never before, of every possible increase in effectivness.

SUMMARY

The paper is a first report of experience with accelerated programs, in a large state university.

1. Comparisons between the pre-acceleration graduating class of 1941–2 and a class which had had some opportunity to accelerate (1942–3) showed almost no acceleration but much retardation in the first group, and a third of the students accelerated in the second.

2. Acceleration in the second group was almost entirely by going to school a fourth quarter in one or more years; there was little acceleration by extra-heavy loads, or obtaining credit by examination.

3. The accelerates in the class of 1942–3 not only graduated younger than regular students, but were also superior in scholarship and participation in extra-curricular activities. Retards were not only older but also clearly inferior in these last two respects. All three groups entered school at practically the same median age. And although accelerates had tested at entrance somewhat higher in general ability and retards lower, the difference in ability appears to be not the only factor in the superior showing of the accelerates.

No unfortunate outcomes of acceleration thus were found, even when acceleration was obtained almost entirely "the hard way," by going to school more unremitingly. But better methods should be found, by which superior students may more easily move through an educational program at faster than average pace.

CLASSES IN REMEDIAL READING AND STUDY HABITS

JOHN RICHARD WITTENBORN
Yale University

Editor's note: Increased attention has been given in recent years to reading at the college level. The author supplies a detailed description of his approach to this problem.

THIS paper comprises a general description of work with speeded reading classes at Yale University during the academic year 1942–43. Many writers have been preoccupied with the problem of establishing the value of special instruction in reading and study habits at the college level, and the value of such instruction has been amply demonstrated. Description of various methods and philosophies employed in this type of instruction have not been publicized sufficiently to provide the greatest possible development in this field.

THE SUMMER AND FALL CLASSES, 1942

At the beginning of the summer term, 1942, the records of the entering freshman class were examined, and students whose predicted score[1] was below 2.0 and whose Scholastic Aptitude or Mathematical Aptitude[2] score was above 400 were invited to attend the preliminary meetings of the new classes in remedial reading and efficient study methods. The voluntary program was announced in *The Yale Daily News* and approximately 80 students appeared at the first meeting of the class. At this meeting every student was given Form A of the Traxler High School Reading Test, and the group was told about the aims, the provisions, and the duration of the special classes in speeded reading and efficient study methods.

As a result of the preliminary testing and other observations, it was apparent that a number of the students who had been invited to participate in the classes did not need specific assistance in reading. These students, approximately 30 in number, were met twice weekly during a period of seven weeks by Mr. Wesley of the Department of Psychology. The sessions were devoted to instruction in study procedures with only minor emphasis on reading problems.

[1] This prediction, based on aptitude scores and earlier academic record, is for the Freshman year. In the grading system employed 4.0 = A; 3.0 = B; 2.0 = C; 1.0 = D.

[2] The averaged standard scores for the College Entrance Examination Board Tests for the 1942 Freshman Class at Yale were approximately 540.

The tests revealed that approximately one fourth of the students who wished to participate in the course could profit from instruction in special reading skills. This group was divided into three classes. The composition of the classes was determined by the abilities of the students. The reading classes were met twice weekly during a period of seven weeks, and no effort was made to regulate attendance.

CONDUCT OF THE COURSE

In the classes, approximately one-third of the time was spent in discussion of study methods and study difficulties. Specific procedures applicable to the various areas of study were presented and analyzed and their applications illustrated. Methods of preparing for and taking examinations were outlined and illustrated. General principles of note-taking and desirable formats for note-taking were presented and specific applications were worked out. Learning principles of known applicability for college work were presented. During the latter part of the term, time was spent in a discussion of review procedures and methods for imposing overall organization in the areas of study. Other topics and problems receiving emphasis were the use of time, the meaning of words, legible hand-writing, and spelling.

In the use of the remaining two-thirds of the total time, a rather unique program for the improvement of reading skills was pursued. Early in the course, a period was devoted to a simple physical diagnosis. The mechanisms of eye movements were presented to the group, and the significance of lip and tongue movements was explained. Other detrimental physical characteristics of poor readers were discussed and provision was made for the students to examine and observe each other. This type of cooperative diagnosis enabled the students who fixated every word, made numerous regressions, or moved their tongues, lips, or heads to become aware of their habits. Specific corrective drills and procedures were set up immediately for overcoming these mechanical defects.

Early in the term a personal information sheet and a time-scheduling form were completed by each student. Forms for describing specific study difficulties were also provided for the students. All of these materials were gathered together and made available in the files of the Clinical Psychologist. The classes knew, of course, how this material was to be used. They were told that the program was an inclusive one and could be made most appli-

cable to the individual and most complete for each individual if it were supplemented with personal conferences or interviews. In the conferences, which varied in number from individual to individual, specific personal problems in the application of general methods or specific study suggestions were worked out. In the conferences many types of problems were expressed. There were problems in vocational selection, curricula selection, and various types of social and personal adjustment. Some of the problems required the services of the Psychologist over a period of months.

Although the reading classes were conducted with informality and no outside assignments were made, there was a supplementary phase of the reading program which was conducted outside of class. This part of the work was designed to facilitate the transfer of skills and attitudes learned in class to materials and situations met outside of class. For this supplementary work, each student selected a book that he was obliged to read or wanted to read. If on the basis of the student's reading skill this book were found to be suitable, it was read in the student's room under rigidly defined conditions. This phase of the program was designed to require no more than fifteen to twenty-five minutes a day. The gains of the students who cooperated in carrying through this phase of the program were greater than the gains of similar students who did not participate in the home work.

After a brief acquaintance with the students, it became apparent that a purposeful, aggressive approach to the subject matter would be the most effective one to employ. As a consequence, speed of reading was presented as a problem in speed of thinking or comprehension. Familiar or easy material should on this basis be covered rapidly. Heavy or unfamiliar material must be scrutinized carefully.

A specific procedure directed toward a limited number of well-defined goals was developed in response to the needs and peculiarities of the students met in the summer reading classes. This procedure has been studied and improved throughout the year. The procedure is based upon the assumption that efficient reading must vary in rate and in intensity with the material under consideration and with the purposes for which it is being read. It was possible to set up five classifications of reading purposes which include almost all reading aims of undergraduates. They are:

1. Review
2. Exploration
3. Entertainment
4. Facts
5. Understanding

By a logical analysis it was found that reading to attain these aims was almost entirely dependent upon a small number of specific reading operations. It was assumed that approximately four distinct types of reading operations were involved. They are:

1. Skimming
2. Rapid reading
3. Ordinary reading
4. Careful intensive reading

Although each of these types of reading has certain distinct characteristics, they are all much alike insofar as they are components of efficient reading. These types of reading are described in the Directed Reading Outline appended to this paper. The content of this outline is not original and is implicit or explicit in most reading manuals.

For college students rate of efficient reading should show a greater inverse correlation with the number of ideas per page than the number of words. The rate with which we read should be conditioned chiefly by the complexity of the material and by the frequency with which materials that stimulate us to perceive and react occur and are therefore pertinent to our goal. Rate in efficient reading is also conditioned by our familiarity with the material.

An important determiner of the rate with which we shall read is our set, determining tendency, goal, or purpose. This fact is of great potential significance if we consider complexity to be in part conditioned by purpose. It is possible to give our set or our purpose a more definite cast after preliminary aid or instruction in reading. This permits an analysis of the conditions under which we are reading and of the factors which lead us to undertake this bit of reading. It is possible for us to behave in a highly purposeful manner in our reading and to react with a high degree of selectivity, provided that we have acquired the essential knowledge and skills.

The goal of the reading instruction is to provide conditions under which skill in each of the reading operations (singly and in combinations) is gained.

The goal of the reading instruction is a functional one designed to provide for maximum efficiency in undergraduates. The term "remedial" is inappropriate for this type of instruction. It is true that the classes provide for a certain amount of remedial drill and instruction, but the work of the class goes far beyond the remedial phase and aspires to a high degree of sophistication in reading. After deleterious practices or specific inefficiencies have been discovered in the individual and remedial procedures have been undertaken, little time is spent in static drill which could serve only to fix certain good habits or contribute to the elimination of certain undesirable ones. Instead, from the very beginning a functional approach with the chief emphasis on practical application is undertaken. Every opportunity is taken to engender in the students an aggressive attitude toward their subject matter. It is not only essential for them to learn how and when to apply the essential reading skills, but it is also most important for them to learn a type of flexibility which enables them to apply the reading skills efficaciously and confidently.

THE RESULTS OF INSTRUCTION

It is apparent, therefore, that the results of this type of reading instruction can scarcely be measured satisfactorily by any of the standard reading tests. It may be expected, however, that the gains may be reflected by changes in performance on standard reading tests. The results of such reading instruction should be in part reflected in a greater efficiency in study procedures. This instruction should also result in increased confidence and a willingness to devise and employ study procedures which will contribute to general efficiency as a student. Whether this type of achievement should result in greater academic accomplishments or should merely permit a happier or fuller life for the student is debatable.

A statistical summary of the scholastic records of the students who attended the summer term reading classes is given in Table I. These data represent the combined marks of 34 students. This represents all of the students who attended as many as one-third of the class meetings and exceeds the number of students who attended regularly. The students who showed the greatest gains were those who attended most faithfully.

TABLE I

AVERAGED SCHOLASTIC RECORDS

Group	Summer Term	Fall Term	Spring Term	General Prediction
July Class of 1945 W	2.0	2.0	*	2.2
Summer reading class	1.7	1.9	2.0	1.7
(N)	(36)	(31)	(19)	(34)
Fall reading class		1.7	1.9	1.7
(N)		(22)	(21)	(22)

* Beginning the sophomore year the students were enrolled in several divisions of the University and an average for the entire group was not available.

In Table I the same type of data is also presented for 22 students who attended the reading classes during the fall term. These students received their invitations on much the same basis as those during the summer. The fall classes were less homogeneous than the summer classes in the respect that they included some probationers who had entered school during the summer and a few upperclassmen. They were chiefly new Freshmen, however, who had entered the Fall term.

From an examination of Table I, it may be seen that there is a consistent tendency for students who have attended the reading classes to improve in scholastic status. This tendency toward improvement is not apparent in the total 1945W class of July freshmen. Table I also reveals that students attending the reading classes exceed their predicted scores, whereas the class of 1945W as a whole fails to attain the general prediction. Despite an initial reading handicap, students attending the reading classes prove as a group to be much more efficient than the total 1945W class. The averaged scholastic records of students attending the reading classes show continuous and stable increments and, despite their low scholastic predictions, tend to equal the records for the total class of which they are members.

Table II permits a comparison of the scholastic records of students who participated in the summer reading course with the records of the poor readers who did not participate. The group of poor readers not in class failed to equal its scholastic prediction and shows a tendency toward a lowered scholastic status. In these respects, poor readers who are uninstructed are decidedly inferior to the poor readers who received instruction. This observation indicates that the favorable record of the students receiving reading instruction may not be attributed to a regression effect.

Securing a complete scholastic record for all the persons who have been in the classes is a simple task, but it is difficult to re-test all the students who have participated in class on a wholly voluntary basis. The students know the exact length of the course, and in the past the termination of the reading course has occurred near the end of the semester.

TABLE II

POOR READERS WHO DID NOT ATTEND THE READING CLASSES

Averaged Scholastic Records

	Summer Warning	Summer Term	Fall Warning	Fall Term	Spring Term	General Prediction
(N)	1.9 (28)	1.8 (27)	1.8 (25)	1.7 (25)	1.7 (12)	1.8 (24)

Median subtest percentile ranks Twelfth grade norms, N = 27

Rate	Story Comprehension	Paragraph Comprehension
38	34	85

At this time most students are inclined to feel that they are very rushed and some are likely to cut the last meeting or two of the class. There is also a tendency for some of them to avoid coming to class the day when they anticipate the final reading test; they seem to feel that they have nothing to gain by taking the test and many of them find time spent in examinations unpleasant. This selfish tendency is probably largely due to the abnormal conditions under which the students are attending school. Most of the students, not necessarily the best ones, however, are eager to measure their gains. In Table II we find the median percentile ranks on the original and final tests for students whose records are complete. The original and final tests are Forms A and B, respectively, of the Traxler High School Reading Test.

The use of the Traxler High School Reading Test, although having certain disadvantages, permits an evaluation of gains in comprehension. In the story comprehension and paragraph comprehension subtests of the Traxler High School Reading Test, sufficient time is allowed for every person to attempt all of the items. No great portion of the gains in comprehension may be attributed to increased reading speed.

TABLE III

MEDIAN PERCENTILE RANKS (TWELFTH GRADE NORMS)

	Rate	Story Comprehension	Paragraph Comprehension
Summer classes (N = 19)			
Before instruction	53	34	47
After instruction	97	70	73
Fall classes (N = 17)			
Before instruction	48	71	73
After instruction	90	85	85

From Table III it may be seen that the gains in rate are greater than the gains in story comprehension and paragraph comprehension. Several factors may contribute to these differences. The story comprehension subtest calls for the retention of a type of small detail not emphasized in the reading classes. The paragraph comprehension subtest scores are not dependent on reading rate and are indicative of level of comprehension. Story comprehension and particularly paragraph comprehension are probably conditioned to a very significant degree by relatively stable characteristics such as intellectual background and basic capacities. In contrast, that which is measured by most rate tests is highly dependent on factors such as attitude, specific information, and modifiable skills.

THE SPRING CLASS, 1943

Early in February, 1943, Form A of the Iowa Silent Reading Test was administered to all of the incoming freshmen. The group was told that the testing was part of the service provided by the Dean of Freshman Year and was intended to permit freshmen to decide on an objective basis whether or not they wished to enter the course in special reading skills.

Early in March each student received a letter in which his standing on the various parts of the reading test was indicated. The letter also contained a statement on the significance of the student's reading skills for work at Yale and an announcement of the voluntary reading course. The reading proficiency of the students was arbitrarily divided into three levels; students within a particular level received identical letters. All who elected the course were expected to attend regularly.

The first three meetings of the reading class were spent in orienting the students to the provision of the course, presenting and elaborating upon

topics of note-taking and preparing for and taking examinations, scheduling and the use of time, and organization of the home reading project. A small portion of every class session was devoted to some particular problem or area in study methods. The content of almost all of the reading material was related to academic problems or topics and to efficient study procedures.

The ensuing four periods were spent in teaching the class to skim. The essential character of the skimming operation is presented in the Directed Reading Outline. All students were given a copy of this outline. The material used in class for teaching students to skim was Strang's "Study Type of Reading Exercises", comprising twenty passages of 1,000 words. In the initial sessions on skimming, the students were urged to depart radically from their usual reading habits and seek out ideas, the most important and most obvious ones. As the class proceeded, it was encouraged to seek more and more organization and an increasingly thorough comprehension of material was demanded. The greater comprehension was effected by introducing flexibility and by gaining skill in perceiving the organization of material. It is important to point out that throughout the period devoted to skimming, the chief emphasis was on content, facts, and their relationship. Words, phrases, and even sentences were disregarded. The students were taught to read in terms of ideas. It is easy to motivate a student to high achievement in this type of undertaking. He is invariably pleased with his gains and relatively few show a significant loss in feeling for sentence meaning or structure.

Approximately 10% of the classes is comprised of persons who have thoroughly ingrained habits of scrutinizing every word and who feel utterly lost when they depart from this tedious method. Those students are taught to skim outside of class. It is almost impossible to teach a student to skim before he has gained confidence in the efficacy of the method.

It is interesting to note that a great number of students who present reading problems are students with anxieties over scholastic work. There is a decided tendency for the insecure student to feel compelled to scrutinize his work carefully and to become somewhat panic stricken if he is not permitted to do this. It is the opinion of the writer that a great many reading problems are created by anxiety in the student. This anxiety is frequently due to the student's limited ability; it may also be due to unfavorable scholastic experiences or to a history of low academic achievement. Anxious

students tend to be particularly hesitant in departing radically from their former snail-pace reading.

On the eighth meeting of class the Traxler High School Reading Test was given in order to ascertain the current relative standing of rate and comprehension subtests. This objective information was desired in order to guard against a disproportionately great gain in rate at the expense of comprehension and retention of detail.

During the three ensuing meetings the Harvard reading films and particularly the transfer selection for use with these films were employed in training in the type of rapid reading described in the Directed Reading Outline.

During the next two meetings text book selections were employed. Reading these materials required great flexibility in the application of all of the skills described in the Directed Reading Outline.

On the fourteenth meeting of class the final test was given. Twenty freshmen attended the class in speeded reading. Retests were not completed for three members of this group. One, who suffered from a visual difficulty, withdrew from the course at the request of his physician. Another did not participate in the last half of the course.

RESULTS OF INSTRUCTION

The gains for two members of the group were unsatisfactory. The poor record of one may be attributed to the fact that his attendance was exceedingly irregular and incomplete. Irregular attendance does not always result in unsatisfactory gains, but often it may be the basis for lack of improvement. It is interesting that the other student whose retest failed to indicate gain from instruction was enthusiastic in expressing his gratitude for the course.

It has been observed that many slow painful readers have a characteristically high degree of retention for details in general. For such students reading instruction does not always result in increased scores for the comprehension subtests which demand retention of details without respect to their significance. Not infrequently there is a slight drop in such comprehension scores for these students, particularly if they made great gains in reading rate.

Table V permits a comparison of the reading performances of the students before and after attending classes. It is apparent that the amount

of gain made by the students in the various parts of the reading test tends to be proportional to the amount of gain possible for the respective parts of the reading test. For example, the greatest gains are in rate, and in the sentence meaning subtest there is a very slight suggestion of a loss. It is difficult to say what has determined this slight loss. Possibly it reflects the nature of the reading instruction. The organization of the sentence received almost no emphasis, and it is possible that certain aspects of the early instruction might incidentally have slightly reduced the students' comprehension of the sentence as a unit of meaning.

Only three students show evidences of real loss on the sentence meaning subtest. Each of these people, however, has more important gains in rate and in other important subtests.

TABLE V

PERCENTILE RANKS OF AVERAGED SCORES

	Rate	Story Comprehension	Directed reading	Poetry Comprehension	Word meaning	Sentence meaning	Paragraph meaning	Location of Information
Class								
Before instruction	45	62	57	67	60	81	52	67
After instruction	93	70	79	87	87	75	72	89

Negligible gains in story comprehension reflect the nature of the course as do all of the retest data. Very little emphasis was made on the indiscriminate retention of detail; instead, organization, ideas, major facts, meaning, and interesting and relevant detail were stressed. Four members of the class show lowered story comprehension retest scores. One of these is the student whose test results failed to show any gain from reading instruction. The other was irregular in attendance and was one of the two unsuccessful members of the class. The third student entered the class late and originally was possibly the poorest reader in the February freshman class. Although his records on the other subtests indicate great absolute gains, he is still a relatively weak reader. The fourth student shows outstanding gains in all parts except two. The apparent losses among certain students in story comprehension probably reflect an overconfidence in their newly gained skills. Since rate does not contribute greatly to scores on this subtest, any drop in this score probably indicates a changed attitude and a failure of the students to reread the passage when permitted.

TABLE VI

AVERAGED STANDARD SCORES

Subtest	Before Instruction	After Instruction	Difference	Standard Error of the difference
Rate	82.4	103.3	20.9	2.4
Story comprehension	98.3	99.6	1.3	3.0
Directed reading	88.4	97.5	9.1	2.8
Poetry comprehension	97.6	107.9	10.3	3.3
Word meaning	97.6	111.5	13.9	1.9
Sentence meaning	102.4	99.6	2.8	2.5
Paragraph meaning	92.7	98.7	6.0	2.5
Location of information (N = 17)	94.0	103.9	9.9	1.4

The contents of Table VI permit determination of the statistical significance of the gains made by the class in subtest standard scores. The performance on story comprehension shows no change, sentence meaning shows a very small loss and the remaining six of the eight subtests show important statistically significant gains. It is improbable that the nature of the gains would change greatly after suitable allowances were made for retest errors due to practice effects.[8]

Although no particular gain in sentence meaning was anticipated, the small loss was unexpected. It may be entirely due to a type of regression effect, wherein because of the initially high level of performance for the total group an accidental or chance loss in the performance of students could more readily occur than accidental or chance gains of comparable magnitude and frequency. Fortunately, it will not be difficult to add a training feature which will preclude a future possibility of failure to gain in this particular type of performance.

DIRECTED READING

Prepared by J. R. Wittenborn, Clinical Psychologist
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The most outstanding single attribute of the good reader is his flexibility. The rate that he advances through printed material is determined by at least three factors:

[8] The following is a quotation from a letter written to the writer by H. A. Greene, co-author of the Iowa Silent Reading Test and Director of the Bureau of Educational Research and Service, State University of Iowa: "On the best evidence which I have been able to secure, the repetition of one form of the test or the immediate administration of a second form of the test will result in an average of no more than two or three standard score points on the total test."

(A) Difficuly of Material. Page for page, light novels are by general agreement less difficult to comprehend than technical material. This fact is understandable when we consider that technical material presents more specific, complex "ideas" per page than does the lighter material. Since we really (or at least should) read ideas rather than words, it is logical that the rate we proceed should depend upon the number of ideas presented per page. The difficulty or complexity of material varies from page to page and from line to line, therefore when you are reading efficiently your rate will necessarily vary with the difficulty of the material.

(B) Familiarity of Material. When rereading an assignment or when reading in your field of major interest, you frequently encounter statements of facts or of principles which are already familiar to you. The greater the familiarity of the material the faster you can read with comprehension. The converse is equally true and perhaps more important; unfamiliar material requires and should be given ample time.

(C) The most important factor in determining your rate of reading is your purpose. The more clearly you define your purpose before undertaking a passage, the more complete can be the realization of your goal. Some common, specific purposes are as follows:

1. Exploration of material.
2. General orientation.
3. Seeking specific information.
4. Recreation.
5. Assimilating information.
6. Review.
7. Studying details.
8. Thorough understanding.

Ways of Reading

1. General

Many readers tend to overlook certain very convenient signals that point to the content and organization of much textual material. A few of them from Larsen* are given here.

(A) Make use of the author's signals:

1. Full signals are words like "first", "second", and symbols like (1), (2), (a), (b), etc. These reveal directly the author's points.
2. Half signals also indicate the author's points or ideas, but do not stand out as prominently as full signals. Some half-signals most frequently used are: "finally", "furthermore", "at last", "besides", and "another". For example, "We drove to Florida, then to Texas, and finally back to New York." These half-signals may introduce another fact, degree, time, place, or examples.

(B) Make use of sentence signals: Paragraphs are usually written with one of these patterns:

1. The topic sentence (which expresses the main thought) is most frequently located at the beginning of the paragraph.
2. The topic sentence may be located at the end of the paragraph.

* Let's Read Better, an unpublished Manual by R. P. Larsen, Personnel Bureau, University of Illinois, Urbana, Ill.

3. The topic sentence sometimes, but rarely, may be located within the paragraph.
4. Sometimes no main topic sentence is given, but the main idea is to be inferred from the details given.

(C) Make use of the paragraph signals: A paragraph is a signal that a different idea is being developed. It should help to show the steps in the writer's thoughts.

1. Types of paragraphs that point the way include:
   (a) The introductory paragraph which gives the reason or purpose of the article. It may "set the stage" for what is to follow.
   (b) The transitional paragraph, readily noted because of its shortness, bridges the gap between two divisions or thoughts. The transitional paragraph usually is divided into two parts: the first referring to or summing up what has gone before, and the second pointing ahead to what is to come.
   (c) The summary paragraph which is usually found at the end of a chapter or section, but which may occur within the article, summarizing the discussion up to that point. It consists of a condensed restatement of the principal points or main ideas. Sometimes a summary is expressed in the introductory paragraph.
2. Paragraphs generally develop in one of the following ways:
   (a) Explanation of details.
   (b) Examples.
   (c) Comparisons or contrasts.
   (d) Definition.
   (e) Combination of any of the above.
   (f) Simple story sequence.

Although you may not always be able to use printers', authors' or sentence signals to guide you, you do always have paragraphs. Take advantage of them in your reading.

2. Skimming

(A) Typical uses:

1. Determining whether a book, chapter, or section contains certain information.
2. Ascertaining the character and the organization of the material.
3. Review.

(B) Techniques:

1. Book—read carefully:
   (a) Title, author's name, date of publication, edition, and name of publisher.
   (b) The preface.
   (c) Table of Contents (it's often helpful to check through the index too).
   (d) Introductory chapter.
   (e) Summary chapter.
   (f) (See 2 below.)
2. Chapters—read carefully:
   (a) Introductory paragraph.
   (b) Concluding paragraph or section.

Note particularly:

(a) Main headings.
(b) Sub headings.
(c) Italicized words.
(d) Charts, tables, illustrations.

Spiral procedure:

(a) Allow the eyes to "spiral" down the page. Starting with the first word in the first line of the page, allow the eyes to sweep down and across to the end of the third or fourth line. Then allow the eyes to sweep down and back to the left, to the beginning of the sixth or seventh line. Continue in this way noting facts, trends, and ideas rather than words, sentences or statements.
(b) This procedure is recommended only for the reader who is free from specific reading disabilities.

Topic sentence and paragraph organization procedure:

(a) Use the "spiral" method but be sure to read the first and the last sentence of each paragraph.
(b) Note whether the paragraph is:
    1. Introducing a new idea.
    2. Simply yielding information—if so, note all signals.
    3. Making a transition.
    4. Summarizing.
(c) The degree to which this method can be used varies with the writer. Most text books are systematically organized and are well suited for skimming.

3. Rapid Reading

(A) Typical Uses:

1. Recreation.
2. Review or rereading for additional material.
3. Get main ideas without all details.
4. Non-technical supplementary reading.

(B) Method:

1. If making outlines or summaries, do so sparingly and at the end of each chapter or section.
2. Use the dictionary only at the end of a given section. Looking up unfamiliar words the minute they are discovered disrupts thought sequence and reduces reading rate.
3. If you come to an ambiguous or difficult passage do not reread it. Sweep on. The chances are that you will find your answer in the next line or next paragraph, and thus save the time that would have been lost in rereading the passage. In those instances where the thought is not cleared up after a few paragraphs, go back.
4. Strive consciously for speed. Time yourself on some of the sections.
5. Use all discoverable cues and signals for comprehension.

4. Ordinary Reading

(A) Uses:

1. Making outlines.
2. Summarizing.
3. Preparing reports and themes.
4. Preparing oral reports.
5. Recreation (aesthetic).
6. Understanding and learning details.

(B) Method:

1. When outlining or summarizing do as much as possible after a unit has been read; avoid if possible breaks in continuity due to note-taking.
2. When desirable make marginal notes or brief notes on paper. Complete the outline from these notes after the unit is completed.
3. At the end of a section or chapter take time out to think about the organization and significance of the content. Try to recall the important details.

5. Careful, Intensive Reading

(A) Uses:

1. Solving problems.
2. Studying technical material.
3. Evaluating and criticizing.

(B) Method:

1. Reread a sentence or passage until you understand it or until you decide deliberately that:
   (a) The passage is truly ambiguous; or
   (b) You do not possess the necessary facts for comprehension.
2. Use the dictionary as you proceed.
3. Take notes as you proceed.
4. Stop at the end of each section and review in your mind the facts and theories that have been presented.
5. Direct your efforts particularly to the more technical or abstruse statements.
6. Try to express the important ideas in your own words.
7. Be attentive to all contributing details.

THREE STUDIES ON THE EFFECT OF COMPULSORY METRIC USAGE: ANOTHER VIEW

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Editor's note: The article to follow was stimulated by an earlier paper.

THE article[1] on the above topic which appeared in the January issue of the Journal of Educational Research seems to the author to contain many statements that may be misleading to those not familiar with the metric system. In reading the article the writer could not help but get the impression that the author was prejudiced against the metric system thus this reply.

In the first paragraph the author says:

"Everything in the "new order" was to be new and they were in an enormous hurry, working feverishly to revolutionize every phase of French life."

The facts are that it took the two French engineers, DeLambre and Mechain seven years (1792–1799) of arduous labor to survey the nine and one-half degrees of the meridian between Dunkirk, France, and Barcelona, Spain, before the length of the metre could be determined, and these seven years were preceded by two years of debate. Nine years of painstaking work would not suggest that they were in a hurry.

Later in the same paragraph we find:

"Thus the metric system came into being—a masterpiece of logic and mathematically perfect but, from the point of view of those who had to use it, most impractical and inconvenient."

The implication in the above sentence seems to be that those that had to use the metric system were illogical and mathematically illiterate.

The author gives next the results of three investigations on metric usage, those of Frederick A. Halsey in 1919, of Arthur E. Kennelly in 1928, and her own in 1938. These are summarized by the author in a table on page 346 as follows:

[1] Yorke, Gertrude Cushing. "Three Studies on the Effect of Compulsory Metric Usage," *Journal of Educational Research*, XXXVII, (January, 1944), pp. 343–352.

TABLE I

A COMPARISON OF THE NUMBER OF TIMES CUSTOMARY AND METRIC UNITS WERE MENTIONED IN THE WRITER'S FIELD STUDY DATA, THE DATA OF HALSEY'S STUDY IN SOUTH AMERICA, AND THE DATA OF THE STUDY BY KENNELLY IN CONTINENTAL EUROPE

Units	Halsey Study (Questionnaire) Brazil, Argentina and Uruguay	Yorke Study (Field) Brazil Argentina, Uruguay and Paraguay	Kennelly Study (Field and Official statements) Continental Europe.
Customary	278	778	762
Metric	355	1434	1967
Total number	633	2212	2729
Per cent Customary	44%	35%	28%
Per cent Metric	56%	65%	72%

The author speaks of Kennelly's report as showing evidence of bias and yet she misrepresents Kennelly's figures as follows: She gives Kennelly's figures for customary units as 762, but among these 762 according to the original report of Kennelly, 303 were metricised units, 189 were submetricised and 270 were non-metric units. The metricised units according to Kennelly's classification were metric but had old names such as the German "Pfund" of 500 grams. Is not 500 grams a metric unit although it has the name of "pfund"? Not according to the author, for she places these with the customary units just because they have the name of pfund. If we call the submetricised units doubtful, these were old units weighed on metric scales such as the Netherland "Elle" (0.6678 meters) and the rheinischer "Zoll" (1.03 inch)—the figures in Kennelly's report should be as follows:

	Number	Per cent
Non-metric	270	9.9
Doubtful	189	6.9
Metric	2270	83.2
Total	2729	100.0

The writer knew Arthur Kennelly before he died. He was on the Engineering staff of the Massachusetts Institute of Technology. He tried to make an unbiased report mainly for his own information. He may have been prejudiced to some degree in favor of metric reform. In any case his report should have been quoted correctly.

The writer has a copy of Halsey's, *A Metric Fallacy*. It was written under duress of argument right after World War I to meet the wave of prometric senitment throughout the world resulting in China, Russia and Japan adopting the metric system. An earlier report of his was based upon 6,000 questionnaires sent to manufacturers in the United States. Certain manufacturers at that time were opposed to the metric system because they thought manufactured parts would have to be changed. Such, of course, is not the case so now the sentiment among manufacturers is 2 to 1 for metric usage, based upon a survey made by the writer in 1936.[2] Halsey's book definitely shows a prejudiced point of view.

Coming now to the section dealing with the author's investigations in South America, she spends some three pages of the nine in relating her experiences in the interior of Brazil among the natives along the Amazon. The writer will merely mention the units quoted as found with the equivalents as she gives them. In Brazil were found the following: the palmo (8.66 inches), milha (1.37 miles), legua (4.09 miles), alqueire (1.03 bushels), quarta (1.03 pecks), onca (1.01 ounce), libra (1.01 pound), arroba (33.3 pounds in coffee but 32.47 pounds in sugar), quintal (129.8 lb.). Elsewhere in South America there is an arroba of 25.35 pounds. In Argentina were found the vara (2.84 feet). In Paraguay were found a league (3.11 miles) and cuadra (94.71 yards) Note the different leagues, miles, pounds and arrobas. It seems that South America is in great need of unification of its weights and measures.

The question arises, what is the implication of all these questions? It seems that our assumptions should be examined. Is it desirable that these people have a uniform system of weights and measures? The metric system offers such a system and they are already on a 65 percent usage basis (to accept the author's figure) of that system. Whether we accept the assumption that it is desirable to have a uniform system or not only one conclusion may be drawn from the author's table, namely the trend is toward uniformity since both the Halsey and York investigations in South America and since they were both prejudiced in the same direction shows this trend The fact that Halsey's shows a 56 percent metric usage in 1919 and Yorke's shows a 65 percent usage nineteen years later is pretty good proof that there is a definite trend towards metric usage in South America.

[2] Johnson, J. T. "A Survey on the Use of Metric Measures", *The Role of Research in Educational Progress*, 1937, Am. Ed. Res. Ass'n, Dep't. of N.E.A.

Let us next examine the conclusions in the summary. To quote from one section of it:

"One important implication of the writer's investigation bears upon the educational question of teaching the metric system in the schools of the United States. The evidence beyond any doubt makes clear that it should not be taught as a basic system which will ultimately replace our present one, because:

1. The metric system as such exists only on paper."

Is this true?

"2. The twenty-eight metric weights and measures which were legalised in the United States in 1866 are used scarcely at all except in laboratory work, where the gram and cubic centimeter are convenient."

The writer wishes to answer this statement for the information of the reader. The United States became a member of the International Bureau of Weights and Measures meeting in Paris in 1875 and has been meeting with thm regularly since then. The metric system was adopted for medical work in the Navy in 1878. The meter was made the United States standard of length by act of Congress in 1893. The metric system was adopted for medical work in the Army in 1894. Congress made it the basis for all electrical work in 1894. It was adopted for public health service in 1902. It was established in Porto Rico in 1913. It was made the legal system in the Phillipines in 1917. The Amateur Athletic Association adopted it for all of its events in 1922. It is now used in the U. S. Coast and Geodetic Survey. It is used by a number of Federal Bureaus in design of armament. It is used by many manufacturing plants. It is used in Forestry, Metrology, Chemistry, Physics, Dietetics and Medicine. Just this year two noteworthy events took place in connection with the metric system. The American Medical Association in five of its publications will give doses in the metric system only in 1944 and thereafter. The other event is that the Council on Pharmacy and Chemistry of the A.M.A. has decided that henceforth it will use only the metric system in publications for which it is responsible. In a recent survey among four prescription pharmacists in Chicago it was found that one reported that 75 percent of the prescriptions were written only in the metric system, a second reported 70 percent, a third, 40 percent and a fourth, 25 percent. We cannot deny that the trend in this country is definitely metricwise.

To continue the author's conclusions:

"3. The advantages claimed for metric weights and measures are pure academic theory. In practice they have more disadvantages than advantages."

Again here is a bold unwarranted statement; to answer would take several pages.

"4. Just as a nation's language cannot be taken away and replaced over night so its weights and measures cannot be either."

The above statement may or may not be true, but no one proposes to change to the metric system over night. Rome was not built in a day and it takes many years for an oak to mature. We cannot expect so logical and perfect a system as the metric to become fully implemented until after many years. It took 300 years for the Hindu-Arabic system of notation to pass from Spain to Italy. It gave to our number system that valuable characteristic of place value which was absent in the Roman system of notation and which gave technology and civilization at that time a boost which would have been impossible with the Roman notation. Yet it was fought by the Europeans for many years. So strong is the inertia of tradition. Any great reform meets with opposition. It has always been thus. It is of singular significance that this same feature of place value which placed the Hindu-Arabic on a higher plane in simplification of computation than any other system of notation is again in evidence in this metric reform since it is the decimal place value of our natural number system that is now fighting for its function in the domain of weights and measures.

There is an interesting relation between wars and the metric system. We know, of course, that wars hasten trends and precipitate changes. After the Prussion Wars in Europe in 1871, Germany, Austria, Hungary and subordinate colonies adopted the metric system, almost doubling the population then on a metric basis. In 1866, right after the Civil War in this country, the metric system was made legal by act of Congress. In 1920-21, after World War I, the metric system was adopted for official use by the countries of Russia, China, Turkey and Japan—thus more than doubling the population that was at that time on a metric basis. It is now officially used by fifty-five of the fifty-seven countries of the world and by more than 75 percent of its population.

This world-wide trend toward the metric system is likely to receive a further boost at the close of World War II, and especially so now since with

peace there will be a move towards unification stimulated by the air plane and the radio. The United States will most likely adopt the metric system in international trade and domestic commerce first and let manufacturing and agriculture follow later.

The best we can do is to teach the simplicity of the metric system in our schools (three units only, the meter, liter and gram) and avoid teaching the conversions. Highly complex discussions have killed the interest in the metric system in the past. Teaching conversions from one system to the other in our schools assumes that we will continue to have two systems, whereas if we taught the simplicity of the metric system by showing the operations within the metric system itself the coming of the day would be hastened when there would no longer be any need for conversions.

THE GROUP INTERVIEW

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Editor's note: Much interest has been shown in recent years in the reactions of persons to various aspects of the schools program. The author presents a method of interviewing groups.

THE group interview is an information getting technique by means of which opinions of several individuals are obtained simultaneously. It is especially useful when the central tendency of the thinking of a group of individuals is desired. The interaction among interviewees leads to the formation of group opinions, and to the elimination of any deviate individual or minority opinions not acceptable to the group as a whole.

The optimum number of interviewees depends on the situation and the recorder. The number should be large enough to permit practically continuous recording but small enough to insure an accurate record. The group should be the size of an informal conversational group so that each of its members contributes to the discussion about as frequently as he does in other groups in which he feels at ease. This implies that a group of those who think slowly should be larger than a group of those who think rapidly. A group discussing a topic on which few views would be expressed should be larger than a group discussing a topic of keen interest. Actually, six to eight interviewees are easily handled, and as many as ten or twelve can be handled by one who has had considerable experience in group interviewing on a given topic.

As an opinion gathering device, the group interview is especially useful in obtaining student reactions to a course as a whole, or to certain aspects of a course. Some of the questions that might be considered at successive points in a course in the light of student interview data include:

1. What does the class consider are the purposes of the course?
2. What experiences should the course include in relation to each purpose?
3. How should the class carry out particular projects?
4. Has the class found some parts of its work of more worth than other parts?
5. How should the course be improved another year?

The group interview has proven useful in providing not only immediate reactions to a course but also opinions in retrospect. For instance, teachers in service had some enlightening views about what parts of their collegiate preparation were of most use to them as beginning teachers, what experiences were of least use, and what experiences would have been a welcome addition to the ones they had as undergraduates.

In an extended educational study, group interviews with faculty members are of especial use in the initial and in the concluding phases of the study. At the initiation of a study, the evaluator needs to become oriented quickly to sentiments of the individuals to be concerned with the study, their opinions about the study itself, and the situation in which the study is to be carried on. He needs also to learn the hypotheses they think of most value. This information he should consider carefully as he plans the study. After collecting data, organizing them, and identifying specific interpretations to be made from them, the evaluator again finds group interviews with faculty members of use. He gathers their opinions as to explanations of study findings and implications for future activities, and considers them carefully in formulating the interpretations and report of the study.

It is clear that the group interview is of use in obtaining student or faculty opinions about a course or curriculum, or in relation to an evaluative study. A brief description of a specific curriculum problem will illustrate another use of the group interview, technique, and will show safeguards appropriate to the technique.

EXAMPLE

Interviewing of student groups was an important initial step in appraising and implementing more effectively the professional sequence offered in the state teachers colleges in New York State. The project was begun by a two-day visit of an evaluator to each of the colleges. In order to become quickly acquainted with the sequence as offered in each college, the evaluator interviewed (1) administrative officers of the college, (2) instructors concerned with theory and practice in the professional sequence, and (3) groups of students. In each interview, an attempt was made to identify strengths and points for improvement in the sequence program. Provision was thus made for counterchecks on information gained.

Student opinions were obtained concerning three of the four successive years of the professional sequence, by interviewing sophomores, juniors, and

seniors. Sophomores commented on the work of the freshman year as it seemed immediately after completion; juniors and seniors, as it seemed in retrospect from the vantage point of one and two years respectively. Similarly, juniors commented on the work of the sophomore year immediately after its completion; seniors, from the vantage point of one year. Seniors commented also on the work of the junior year immediately after its completion.

Professors in the Education Department who were familiar with abilities of the students in each class were asked to select six students who would constitute a cross section of their class. It was suggested that two students be of high ability; two, of average ability; and two, of low ability. It was also suggested that all students of a group be about equally talkative. This latter suggestion was made in view of the fact that less talkativeness seems often to be associated with students identified as less competent. A third suggestion was that students of each group be so selected as to be representative of all sections of the class. These precautions in setting up groups took into account that student views about the professional sequence might vary with ability level of students and with instructors in the sequence.

In each student group, a few introductory remarks set the stage for an hour of discussion, as follows:

Evaluator: "Do you know why we are meeting? In the state, there is an interest in appraising and improving the courses in Education. Since you have had some of those courses, your ideas about them will be most helpful.

We are interested only in group opinions, not opinions of individuals. You probably noticed that I did not pay much attention to what each of your names is. You were selected as a cross section of your class, a group that could give us the thinking of your whole class. In order to get group opinions, let's do this. If anyone of the group expresses an idea that you don't agree with or don't think is true as far as the class as a whole is concerned, you say so at once. Then we can discuss the point until we find out what the group as a whole thinks about it."

After plans had been made by the group as to how it would divide the time in discussing successive parts of the professional sequence, the evaluator withdrew from influencing the group by saying, "Now I'm just going to be your secretary. Suppose I divide my sheets of paper in half so that I can put down "Strengths" of the program on one side, and "Points

for improvement" on the other. If you don't mind, I'd like the last few minutes of the period to check over with you what I get down to be sure I have your ideas straight."

As the students discussed, the evaluator made a point of being an inconspicuous and neutral member of the group. Only if the discussion was leaving out some student of the group would the evaluator smile or otherwise gesture encouragement to express oneself. *At no time did the evaluator express approval or disapproval of the point being made.* If discussion ceased, the evaluator sometimes reenforced group rapport with some innocuous remark such as, "There! I caught up with you. I really ought to have learned shorthand, don't you think?" Seldom was any such remark necessary, however. Inquiries as to "Is this what you want?" were answered with, "I want just what you think." Usually at the end of the hour, after group ideas had been read back and either approved, or amended and approved, the students would say, "Wasn't that interesting to talk about what we've had?" One day, one of the students turned to the evaluator and added, "But we sort of left you out of it, didn't we?"

Before each student group left, the evaluator made a point of having the group understand that it was one of several groups to be interviewed, and that how its views compared with those of other groups was going to be interesting. It was assumed, and was made clear, that each group was to be independent of every other group in its views.

RESPONSES OF INTERVIEW GROUPS

In general, if the evaluator is enough of an outsider to represent none of the pressures that might make for biased expressions of opinions (e.g. wish to get good grades, to impress teachers and superintendents favorably, to give answers expected by instructors), he will obtain thoughtful and open expressions of opinion. If he does not, he must identify the critical interfering factors immediately and take them into account later in interpreting group responses. The mental set of the group, its ability level, distractions in the room, and recency of pertinent experience are all potentially factors that may distort responses. Certain cues easily identify the operation of such factors. For instance, a group previously informed as to the problem for discussion reacts differently from groups oriented in the interview itself. Someone may start the discussion immediately with an air of decision and a voice calculated to be definitely convincing, "Now we think that . . .".

or someone may soon say, "As we were coming up the stairs, we decided . . ." Such a mental set of a group needs to be kept in mind in interpreting responses.

Occasionally, a group interview may be arranged for members of a class that has a feeling of aggression. Frustrated or otherwise annoyed to the point of resentment, interviewees find in the more or less free response situation of the group interview an opportunity for catharsis. They express themselves in negatives. If the interview is long enough, they swing back to positives that are also in excess. A user of the group interview technique needs to identify over-all sentiments and detect the more specific opinions imbedded within them.

The ability level, or ability range, of an interview group should be taken into account in considering its responses. A homogeneous group of high ability will express an enthusiasm for "diving right into" a complex situation. Its members will comment favorably on some rather abstract topics as interesting ones. A group of average ability students, on the other hand, may comment on those same topics as "all theory" and probably will go on to suggest the desirability of having more "real experience." A group of low ability students will report that "a lot of the course just goes over our heads." They may mention a topic discussed from several standpoints as "something they keep telling you about again and again—just repetition." Invariably they wonder about how much time should be spent in preparation for classes, and mention large number of hours that they have actually spent on what others would consider a short or average assignment. They appreciate being gradually inducted into new and complex situations and having both class and individual help with their work.

Group rapport is another factor to be considered in drawing inferences from group interviews. Suppose a group is discussing a topic with an evaluator who is interested but is expressing neither approval nor disapproval. If an instructor of the group enter, the discussion may continue but with a subtle change. Peer expectations of saying what is what are replaced by professorial expectations of certain kinds of answers. Or, if some individual be working in the rear of the room (a situation to be avoided if at all possible), his exit may be the stimulus for greater frankness. Whenever factors unavoidably alter the rapport of an interview group, the fact of interference should be noted and the extent of interference estimated and taken into account in considering group responses.

The recency of a course or of an experience reflects itself not only in the kind of comments made but also in the fullness of comments. The more recent the experience, the more detailed the comments and the greater their number. The kind of comments depends also on subsequent experiences interviewees have had in relation to the matter under discussion.

RESPONSES AS OPINIONS

Interpretation of group responses should take into account not only that the responses may possibly be distorted but also that they are opinions. Not every student opinion should be considered literally in planning improvements in a course. For instance, if students feel that a course "has too much in it," the course might be improved by reorganizing course material so that a few intergrating themes stand out clearly, rather than by actually cutting out course content. Or, if students feel that they are expected to do "too much reading," their view may indicate need for help in reading course material. Other student opinions can be taken more literally, for instance the recommendation of prospective elementary school teachers that their class not be taught "as if we were a class of grade school youngsters." College students prefer that their instructor work with them on a professional level, perhaps by describing a particular grade school class and asking how the class might be handled.

Student opinions of a program are sometimes confused with evidence of its worth. This confusion is understandable, but to be avoided. The worth of a program is determined on the basis of criteria set up for it. One of these criteria may, or may not, be that students find it a satisfying experience. If that be a criterion, then opinions of students may be one evidence as to the worth of the program. However, to generalize from evidence on a single criterion would dangerously ignore all other, and probably more important, criteria of the worth of the program.

VALIDITY AND RELIABILITY OF INTERVIEWEE OPINIONS

If reasonable safeguards are provided in setting up interview groups and in conducting interviews, opinions of the group are opinions of the larger class from which the interviewees are selected. Evidence of validity is found in that opinions are consistent among themselves, in line with those expected, considered accurate by the interviewees, and corroborated by inde-

pendent data. How such evidence is obtained may be illustrated by further reference to the student interviews at the beginning of the appraisal of the professional sequence offered in the state teachers colleges in New York State.

In the first place, in that study, consistency among the opinions of different groups of students was evidence that the opinions were both reliable and valid. In each of the colleges, sophomore, junior, and senior interview groups had like opinions about the freshman course when it had remained the same, and different opinions when it had been changed. Juniors and seniors volunteered similar and supplementary views when they had had the same sophomore course. This consistency of student opinions about the professional sequence within a particular college was augmented by consistency of student opinions within all of the teachers colleges within the state. Where the pattern of the sequence was consistently the same from college to college, student opinions were consistently the same; where the pattern had variations, student opinions varied correspondingly. Furthermore, opinions of prospective teachers in the ten state teachers colleges preparing elementary school teachers in New York State had points in common with opinions of prospective teachers in other colleges.[1]

In the second place, that student comments were within the realm of expectation was evidence of their validity. When comments of a particular group of students about a particular course were checked over with the instructor, he was able invariably to account for opinions given. Furthermore, those instructors who were accustomed to getting unsigned statements from their students with regard to their course frequently volunteered remarks such as, "Yes, we've gotten that comment." Interestingly enough, in several instances, they have gone to say that the group interview method as used by an external evaluator yielded comments beyond those that they had obtained.

In the third place, validity of opinions was corroborated by students themselves. When the record of their remarks was read back to them at the conclusion of their interview, they did not hesitate to clarify a point, to suggest that a particular point be emphasized especially, to correct any error noted, and finally to approve when the record was accurate.

[1] These general opinions of prospective teachers are to be reported in an article in the near future.

In the fourth place, the descriptive material that was incidental to the student interviews was corroborated in detail by the descriptions of the professional sequence given by faculty members and administrators. Comments of administrators, of faculty members, and of students at each college were consistent with each other. In this connection, it is interesting to note that student opinions on educational points are so much like those of their instructors that the resemblance might at first be considered "too good to be true." However, their consistency is understandable in view of the fact that student thought on educational matters, especially that of freshmen and sophomores, has been shaped almost exclusively by their instructors.

SUMMARIZING GROUP OPINIONS

Even though group opinions may be valid in themselves, they may be distorted as they are summarized, unless sufficient care is taken. It is especially important that the outline of the summary be developed in terms of the purposes of the interviews and the kind of data in the interview record. Satisfactory procedures may be illustrated briefly by further reference to the study cited. How should opinions of sophomores, juniors, and seniors from each of ten state teachers colleges preparing elementary school teachers be summarized? The question was answered when it was noted that student groups had in each case given their opinions, either entirely or for the most part, in terms of the successive courses in the sequence. Opinions, accordingly, were summarized by courses.

Probably three considerations were jointly responsible for further decisions about how student opinions concerning the professional sequence should be summarized. (1) In appraising and improving the implementation of the professional sequence in the state teachers colleges of New York State, it was desirable to determine competencies expected in teachers. These would constitute objectives of the sequence, and would serve as a frame of reference for appraising the offering within the sequence. (2) Competencies that students wished to develop were clearly evident in the group opinions. Students stated their objectives, at least implicitly, in both their suggestions for improvement and their enumeration of strengths of the program. For instance: "We didn't learn how to write a lesson plan. We really should be taught that before we take over a group of children." Or, as a strength of their course in "Child Development," "We learned about children—how

they act and reasons why they behave as they do." (3) In presentations of findings, as favorable a statement as the data warrants is desirable. In view of these three considerations, opinions of student groups were summarized for each course in terms of: (1) student objectives for the course, (2) experiences mentioned as strengths of the course or suggested as means for improving the course.

CONCLUSION

The group interview method has proven useful in situations in which the central tendency of the thinking of certain groups of people is to be determined within a short period of time. Its usefulness in obtaining student opinions about a course or program, or faculty opinions at the beginning or conclusion of an evaluative study, suggest experimentation with the technique in other situations.

Another point for further investigation is the relation of this technique to other techniques for extracting opinions about a common experience. Specifically, what is the relation of the group interview to the individual interview? How do opinions of a group of six adolescents or adults on a given topic compare with the separate opinions of the six persons? Is the time saved by group interviews (e.g. five hours) offset by any loss of important values? What additional values are gained because of the interstimulation of the group? Such questions should be studied.

Yet even without further investigation, the group interview merits further attenion. Those who use it should take care to see that:

1. Members of an interview group are so chosen as to make the group representative of the population from which it was drawn.
2. Groups are set up so as to provide opportunities for checking on consistency of opinions.
3. The number of individuals within a group are sufficient to permit practically continuous recording, but are not too numerous so as to prevent complete and accurate recording of ideas expressed.
4. Groups feel no pressure that might bias their views on the topic to be discussed.
5. Groups are handled so as to have rapport with the evaluator, but no influence by the evaluator.
6. Group opinions are interpreted as opinions about an experience, not as evidence of the intrinsic value of the experience.
7. Group opinions are classified and summarized with care.

TEACHERS' INSTRUCTIONAL DIFFICULTIES—A REVIEW OF RESEARCH

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Editor's note: Many attempts have been made to make the curriculum for the education of teachers more practical. The author contributes to the literature in this field by summarizing studies of the instructional difficulties of teachers.

TEACHERS are not unwilling to admit, to the proper persons and under favorable circumstances, that they have classroom problems. Investigators have discovered, by one means or another, what teachers regard to be their instructional problems. It has also been found, in several studies, that supervisors, principals, and superintendents have certain notions of what teachers' problems are. The present report does not purport to analyze all available studies of teachers' instructional problems. It does cover what is probably a fair sample of such studies as were published during the period, 1927–1941. No attempt has been made to canvass the considerable literature dealing with the personal, health, mental hygiene, and community problems of teachers. Special attention has been given to reports of research on teachers' problems directly related to the classroom and to teaching. The writer is well aware of the fact that he has artificially delimited the area of research to be covered. No one would deny that teachers' instructional problems have mental hygiene, health, community, and personal implications. However, it was felt that real value might come from an analysis of a limited type of research.

A few reports have been included (3, 9, 17, 40, 41, and 42) for their merit as general discussions of our problem or because of their particular attention to research methods in the investigation of teachers' difficulties.

A BRIEF ANALYSIS OF THE LITERATURE

The following tabular presentation of certain facts regarding the studies reported (Table I) serves as a superficial over-view of published research on teachers' instructional difficulties. Originally this chart was to have included columns for sex, race, experience, and training of teachers studied. So few studies reported these facts, however, that this information is given in supplementary form for only those studies in which it is clearly indicated.

TABLE I

SUMMARY OF STUDIES OF TEACHER'S INSTRUCTIONAL DIFFICULTIES

Study	Teachers studied	Number studied	Method of study	Aids to reliability
1. Anderson	Beginners, grade (?)	20	Free enumeration of problems	None
2. Anonymous	Beginners, elem.	1	Personal testimony	None
3. Barr (a contemplated study)	Junior H. S. civics	----------	Case method, various tests, observations, supervisory ratings	Sampling, variety of measures
4. Barr	Rural, grades 7-8	167	12 pupil measures, 20 teacher measures	Sampling control of factors, statistical analysis
5. Barr and Rudisell	Beginners. Grade (?)	311 teachers 88 principals	Free enumeration	Agreement of teachers and principals
6. Betts	Elementary and H. S.	117 elem. 139 H. S.	Free enumeration	None
7. Betts	Elementary and H S.	341 elem. 54 H. S.	Informal report	None
8. Bozarth	High school	1	Personal testimony	None
9. Brooks	An informal discussion, personal opinion. States 5 problems from "the mass of material at hand". Historically interesting.			
10. Cahoon	Elem., H. S., Rural, Beginners. Principals	344 in 1929 129 in 1930 "About 300" principals	Free enumeration	First 100 teachers checked against 344. Teachers checked against principals
11. Connor	City elem.	68	Daily diary, check list	None
12. Craig	Elem., south towns under 2500, white	978	Questionnaire, check list	Repeated questionnaire, teachers checked with their supervisors.
13. Davis	Elem., H. S. Colorado	1057	Free enumeration, with suggested problems areas	H. S. and elem. reported separately
14. Dewey	H. S.	500–600	Oral discussion	None
15. Eggerston	Mixed H. S., elem., recent graduates	120 men 482 women	Free enumeration	None
16. Eliassen	Mixed elem.—H. S. Recent graduates	120 men 482 women	Informal report	None
17. Graybeal	A check list of teaching problems prepared by analysis of literature, of rating forms used in training schools, and of experimental studies. Results: a "diagnostic chart."			
18. Hacker	Rural	86	Listed "least efficient activity"	None
19. Hanson	Student–critic teachers in H. S.	88 students 88 critics	Check list experimentally built	Related critics' and students' ratings
20. Hill	Beginners, H. S.	70	Informal report	None

TABLE I—Continued

Study	Teachers studied	Number studied	Method of study	Aids to reliability
21. Hill	Students, and experienced H. S. teachers, academic	100 sts. 150 teachers	Check list	Check list reliability as judged by repetition
22. Johnson and Umstattd	Beginners rated by supts.	183 Supts.	Check list	Correlated rankings of 2 groups of superintendents
23. Kyte	Rural (Mich)	115	Check list based on prior study	None
24. Kyte	Rural	69% of 205	Check list based on prior studies	None
25. McClusky and Strayer	Michigan, mostly rural	131 (79 women, 47 men)	Check list of teaching situations	Carefully made check list, analyzed by years experience, marital status, sex.
26. Meyer	Junior H. S. current event teachers	113	Informal report	None
27. Moore and Cole	Rural supervisors	92 Negro 318 White	Supervisors report help requested	None
28. Moore) 29. Moore)	Elem., city and rural	210—analyzed reports of conference with their supervisors; 100 city, 238 rural—kept daily logs 444 city, 92 rural—listed help needed		Variety of methods of getting at problems
30. Moore	City elem.	100 White 100 Negro	Listed help needed	None
31. Morrison	City elem., and H. S.	158 Elem. 62 H. S.	Listed "most helpful supervisory aid"	None
32. N. E. A.	City–rural, elem.–H. S.	3707	Questionnaire, check lists	Based instruments on studies of teacher activities.
33. Neely	Rural	91	Checked by 23 supervisors on check list	None
34. Stump	Beginners, Grade (?)	Not reported	Ranked 8 problems. (Source of problems not indicated)	None
35. Symonds	Summer class members, Grade (?)	94	5–10 page essay on "Present Problems" with 11 areas suggested	None
36. Thiel	Secondary, "limited experience"	205 teachers 82 principals and supts.	Check list used by principals and supts. Teachers made informal reports on problems.	Checked teachers prins. and supts.
37. Tostlebe	Rural	"269 asked"	Checked 135 activities to determine adequacy of training in a teachers college	None
38. Uggen	Rural	A summary of 15 studies, 12 by questionnaires, 10 by check lists, 3 by lists from teachers. Number of teachers in studies from 50 to 544, not indicated in one study. Gives condensed list of problems.		

TABLE I—Continued

Study	Teachers studied	Number studied	Method of study	Aids to reliability
39. Umstattd and Johnson	Beginners rated by supts.	183 supts.	Check list	None
40. Wahlquist	General discussion. Throws light on the sources and meanings of teachers' difficulties			
41. Waples) 42. Waples) 43. Weeks	Discussions of research methods. Reports check list of 300 teachings difficulties secured from 200 teachers in grades 7–12. Rural	86	Secured YES and NO answers to difficulty of 20 items from Charters and Waples' rural teachers' activities.	None
44. Weeks	Rural	46	Check list of problems which need supervisory help	None
45. Wightman	Probably elem.	30	Diaries (period not reported)	None
46. Wilt	Elem. science	Not reported	Method not indicated	Reports problems by grades.
47. N. E. A., supervisors	Elem., secondary, special	154 supervisors, 229 teachers	Informal report, and check list	Variety of methods and sources.

The studies are numbered in this table in the same order as in the general bibliography.

A total of 12,372 teachers (8,656 exclusive of the N.E.A. study (32)) have been canvassed in these various studies. This represents a mean of 364 teachers in the thirty-four studies reporting the number of teachers involved. The mean is 262 if the N.E.A. study is excluded. In eight studies a total of 1,102 supervisors, principals, and superintendents are involved. In six of these eight studies administrators and supervisors are involved along with teachers; in two only administrators are concerned.

THE TEACHERS STUDIED

Rural teachers and beginning teachers are more often studied than the more experienced city teachers. Ten studies deal with rural tachers; thirteen with "beginning" teachers, that is, teachers in service from a few weeks to two years; and three with prospective teachers. Only two studies, other than the thirteen that deal with beginners and the three that deal with prospective teachers, state definitely how much experience the teachers in question had. It is difficult in some of these studies to know whether the teachers in question teach in elementary or in secondary schools. In only

two studies is it clearly stated how many were men and how many were women. The race of the teachers is indicated in but two investigations. In five studies the number of teachers involved is not indicated at all or is indicated in such a way as to leave the reader in doubt as to the exact number.

METHODS OF RESEARCH*

The most common methods of discovering teachers' instructional problems are self-reporting methods. The following list indicates the various methods employed, with the studies using each:

A. Informal Report

(1) Informal answers to such questions as, "Will you describe the two or three problems that trouble you most in your classroom work?" (1, 6, 7, 13, 16, 18, 20, 26, 30, 47)

(2) Informal report supplemented by the reports or ratings of supervisors. (5, 10)

(3) Informal, personal account in essay form, spontaneous. (2, 8)

(4) Informal, personal account in essay form directed by specific suggestions. (35)

B. Prepared checklists of instructional problems

(1) Check list answered by the teachers, usually checking on the prepared list "most frequent" or "most persistent" problems. (23, 24, 32, 44, 47)

(2) Check list by teachers and the supervisors. (12, 19, 36)

(3) Check lists by supervisors only. (22, 33, 39)

(4) Check list to reveal adequacy of training. (37)

C. Oral discussion to reveal difficulties. (13)

D. Supervisors' reports of help asked for. (27, 47)

E. Diary or daily log:

(1) Diary alone. (45)

(2) Diary and check list. (11)

(3) Diary, record of conferences with supervisors, and lists of help needed. (28, 29)

* A critical analysis of research methods in this field has been reported in: "Research Methods in the Investigation of Teachers' Instructional Difficulties," *Educational Administration and Supervision*, XXVIII (September, 1942), 457–462.

F. Problems revealed by an evaluation of supervisory aid, etc. (3, 4)
G. Case study, use of teacher tests, pupil tests, observation, etc. (31)
H. Ranking of prepared list of problems. (34)
I. Problems revealed by job satisfaction questionnaire. (25)
J. Check list of professional beliefs. (20)
K. Method not revealed. (46)

Nearly half of these studies have depended mainly upon teachers' informal reports of problems. Heavy use has also been made of prepared check lists, and lists sometimes of the writer's own creation, sometimes based on preliminary free-response studies, and occasionally based on careful analysis of prior studies. Two recent studies, one by the present writer[21] and one by McClusky and Strayer,[28] are referred to here as providing indirect evidence of teachers' difficulties. The latter study clearly reveals the teacher's preference for certain activities and his distaste for others. In twenty-three studies there was no effort made to check on the reliability of teachers' or of supervisors' responses. In fourteen studies some effort was made to check responses, the most common being the comparison of teachers' reports with those of supervisors.

GENERAL RESULTS OF RESEARCH

Any synthesis of the results of these various studies is made difficult by the diverse nature of the studies and the variations in the thoroughness with which they were carried out. The writer had originally hoped to achieve some sort of exact quantitative analysis and summary. This has proved, for him at least, to be impossible. A number of the studies presented lists of instructional difficulties in the order of their frequency or in rank order of their seriousness as judged by the teachers. It has been possible to summarize these studies roughly by listing the most frequent or most serious problems for these studies. There were thirty-one studies of such a nature as to permit this rough form of summary. The six most frequent, or most serious, difficulties were selected from each study. These have been arranged in the following list in order of frequency by listing first the difficulty mentioned in the most studies.

Difficulty	No. of Studies in Which Difficulty Was Among the First Six
1. Difficulties in providing for individual differences among pupils	19
2. Difficulties in teaching method	18
3. Difficulties of discipline, control, social development of the pupil	17
4. Difficulties of motivation, getting children interested, getting them to work	12
5. Difficulties in the direction of study	9
6. Difficulties in organizing and administering the classroom	8
7. Difficulties in selecting appropriate subject matter	6
8. Lack of time during the school day for all the things that need to be done	6
9. Difficulties in organization of materials	6
10. Difficulties in planning and making assignments	5
11. Difficulties in grading and promotion of pupils	5
12. Inadequacy of supplies and materials	4
13. Difficulties in testing and evaluating	4
14. Personal difficulties of the teacher	4
15. Difficulties arising from conditions of work	3
16. Difficulties involved in diagnosing and correcting particular pupil difficulties	3
17. Difficulties in teaching reading	3
18. Difficulties in making plans for teaching	3
19. Difficulties in promoting desirable habits	2
20. Difficulties in securing study aids	2
21. Difficulty in securing pupil participation	2
22. Difficulty because pupils talk while others are reciting	2
23. Outside interruptions of class work	2
24. Miscellaneous problems mentioned in only one study	40*

* These were mostly specific problems. Seven were difficulties in teaching this or that subject. Others were rural school problems such as "only one pupil in a grade," or "too many grades in one room."

Obviously some of the problems listed could be combined. However, it seemed best to list them just as they were found in the reports. It is apparent that the difficulties most frequently mentioned have been stated in general terms. There are two reasons for this: first, the tendency to include such general problems in check lists and, second, the practice of a number of writers of combining under general headings a variety of specific problems reported by the teachers they canvassed. Both of these practices tend to lessen the value of research on teachers' difficulties.

RELATION OF TEACHING FIELD TO DIFFICULTIES

Certain problems reported by elementary school teachers have been reported infrequently, if at all, by secondary school teachers. For example, difficulties in teaching reading, history, penmanship, and music appear only

in the studies of elementary school teachers. On the whole, however, the major problems of the two groups seem very similar.

Rural school teachers, especially when free enumeration of problems was permitted, tended to list very specific problems. Having time enough to schedule recitations, having too many grades in a room, getting supplementary readers, and like problems trouble the rural teacher.

RELATION OF TEACHERS' AND SUPERVISORS' JUDGMENTS

In those studies that employed ratings, check lists, or free reports from supervisors, a substantial degree of agreement seems to prevail between teachers and supervisors. Barr and Rudisill[5] found that teachers and principals agreed rather well as to the nature of the difficulties of beginning teachers, although the principals stressed the teacher's personal characteristics, her relations to the community, and her appreciation of pupils much more than did the teachers. The teachers, on the other hand, stressed conditions of work, problems of personal adjustment, lesson planning, and the burden of administrative details, much more than did the principals.

Craig[12] reports 76.4 per cent agreement between teachers and their county superintendents, and 91.4 per cent agreement between teachers and their rural supervisors. This study deals with reports of aid asked for and help secured by the teacher. Hanson[19] reports rank correlations of +.81 and +.82 between the rankings as to difficulty of certain activities when two groups of student teachers were compared with their critic teachers.

Thiel[36] asked teachers and supervisors to rank problems as to difficulty and found them to be in substantial agreement. However, neither group agreed very well with the Charters and Waples rating of the importance of the activities involved.

That supervisors agree well among themselves as to the difficulties of teachers is suggested by two studies.[22, 27]

RELATION OF EXPERIENCE AND TRAINING TO DIFFICULTIES

The difference already noted between the problems of rural and town teachers is no doubt in part a function of their difference in experience and training. Rural teachers have typically been teaching a shorter time and

have had less training. The only study that pays particular attention to variations in problems with experience is that of Barr and Rudisill.[5] They found that "most teachers who fail do so during the first year." While most problems diminished in importance with more experience, there were some that increased in seriousness. Among these were: provision for individual differences, teaching pupils how to study, and determining the objectives of teaching. A number of problems seemed to persist at about the same level of difficulty as experience increased. Among these were: handling routine, organization of work, and conditions of work. There is clearly a great need for more of this type of research to get at the relation of experience to teaching difficulties. The practice in most studies of ignoring the variables of training and experience results in data of much less value than would be the case if these variables were accounted for.

THE DIFFICULTIES TEACHERS MINIMIZE

It might reasonably be argued that the problems teachers minimize are as significant as those they stress. The writer has emphasized the fact that these various reports are, for the most part, expressions of what teachers regard to be their own problems. That these *felt* difficulties may not be *real* difficulties is evident. There are some teachers who report that they have no difficulties or who fail to check any when a check list is used. Davis[12] states that 55 of his 1130 teachers reported they had no difficulties. Five of Meyer's[26] 113 teachers said they had no difficulties. Meyer also had eleven teachers who failed to check any problems, but who did not deny that they had difficulties. Cahoon[10] reports that 16 per cent of his group failed to report any problems.

Knowing how many people feel about answering questionnaires, some of this apparent lack of problems may be attributed to unwillingness to take the time to write them down. Some of this apparent lack of problems, no doubt, is also due to distrust. How much of it is due to an unawareness of real difficulties we cannot know from these studies.

By tabulating the six problems from each study that were least frequently mentioned or rated as of least difficulty, it has been possible to make up a list of the teachers' least troublesome difficulties. This list follows.

Least Troublesome Difficulties	No. of Studies in Which Difficulty Was in the Lowest Six
1. Difficulties involving the personal characteristics of the teacher	9
2. Difficulties of order and discipline	8
3. Difficulties with parents and board	6
4. Difficulties with attendance and regularity	5
5. Difficulties in relationships with supervisors	4
6. Difficulties in teaching the lesson	4
7. Difficulties of class routine and management	4
8. Difficulties in finding seat work	3
9. Difficulties due to inadequate academic preparation	3
10. Difficulties in setting up units of work	3
11. Difficulties in formulating objectives	3
12. Difficulties with professional reading and study	3
13. Failure to understand and appreciate children	2
14. Difficulties of building, rooms, equipment	2
15. Difficulties with records and reports	2
16. Fear of pupils, nervousness	2
17. Difficulties in teaching reading	2
18. Difficulties in dealing with controversial issues	2
19. Lack of supplies	2
20. Difficulties in regulation of heating	2
21. Too many duties	2
22. Difficulties in helping maladjusted children	2
23. Difficulties in teaching music	2
24. Inadequate professional training	2
25. Difficulties in diagnosing pupils' problems	2
26. Difficulties due to individual differences	2
27. Miscellaneous problems mentioned in only one study each	58*

* Mostly specific problems such as "whispering," "getting started in class," and "making drill cards." Six were problems of teaching a particular subject.

The number of different problems in this category is considerably greater than in the category of "most frequent" or "most difficult" problems. There were several problems included in both lists. Perhaps the most significant thing about the least frequent, and least difficult, problems is the inclusion of so many problems that have to do with, or stem from, the teacher's personality. Difficulties involving the teacher's personal characteristics, inadequacies in preparation, difficulties in discipline, difficulties in personal relationships with board and parents and in relationships with supervisors, failure to appreciate children, nervousness and fear—all these received relatively little emphasis as instructional difficulties, except discipline which appears in both lists. The fact is that, when free enumeration of difficulties was the method used, teachers rarely mentioned these personality-related problems. Only when these problems were included in check lists was much attention given them by the teachers.

INDIRECT STUDY OF DIFFICULTIES

The writer recognizes that to limit this report to the studies that have obviously sought to canvass teachers' difficulties is to impose a serious limitation on what *can* be reported. There are two types of investigation that should be mentioned as helpful additions to the more obvious lines of research undertaken in the studies reported.

One of these lines of study is found in the increasing literature on the mental hygiene of the teacher and of teaching. This literature is replete with significant facts about the difficulties of teachers and of teaching. What is here reported is probably not nearly so significant as what is involved in these studies that get into the affective side of the teacher's life and work. One clearly senses this, for example, in Symonds'[35] report.

The other of these lines of investigation is the indirect study of teachers' difficulties through self-reporting devices. The present writer's study[21] of professional beliefs and opinions of secondary school teachers and McClusky and Strayer's study[25] of job satisfaction among teachers are illustrative of this approach. Clearly, confusion in the mind of a teacher as to what he believes about teaching is a source of much teaching difficulty. Such confusion characterized the thinking of a great many of the teachers the writer canvassed. Similarly, dislike for various specific aspects of teaching, as revealed by McClusky and Strayer, is evidence of difficulty in many instances.

CONCLUSION

By way of summary, the following points may well be emphasized:

1. There is a considerable body of literature on the instructional difficulties of teachers. With a few exceptions, the studies made in this field lack adequate controls, depend too much upon self-reporting, and are so reported as to be of only slight assistance to supervisors and teachers.

2. These studies suggest that the chief difficulties of teachers are those arising from the need for keeping the classroom going, teaching the lesson, managing routine, keeping the pupils busy, and maintaining order. Purpose for teaching and personal effectiveness in teaching seemed to have caused these teachers little difficulty, at least so far as they are aware.

3. There is reason to believe that some of the recent studies that attempt to get at teachers' difficulties by indirect means will yield significant results. Such studies, coupled with the more carefully controlled evaluations of teach-

ing, should open up new lines of productive research. There is little reason for research in this field unless the yield is useful in supervision and teaching.

4. It is increasingly clear that "the satisfaction of the teacher in his job is a product of his total life while engaged in teaching. . . . There is no evidence that the experiences centering in the classroom can be segmented from life outside the classroom."[25]

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ONE-EYED AND TWO-EYED READING

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Editor's note: It has been demonstrated that some children read with different degrees of skill in either or both eyes. The author supplies further evidence of this applied particularly to test validity.

IT HAS been demonstrated that some children read with different degrees of skill in either eye or both eyes. One eye may be markedly superior to the other or even to the reading with both eyes. (1, 2, 5) If it can be demonstrated that, in the presence of certain conditions, reading with one eye is very apt to be better than with both eyes, it becomes highly important to determine the reading skill of each eye separately. Ordinary reading tests must fail to secure accurate measurements of ability, if when reading with one eye, the pupil's achievement is better than with both eyes.

We have investigated three factors which may influence the results on reading tests of the separate eyes, namely eye preference, visual acuity, and single-eye reading ability. We used the Binocular Reading Test (4) to determine eye preference. The test consists of a story mounted on a stereoscope card. The two halves of the card differ so that different material is offered to each eye. A number of words on each half of the card are omitted on the opposite half. The words of the paragraphs are so spaced that if there is fusion and no eye preference, the story is read simultaneously and equally with both eyes. If there is a tendency to prefer one eye, it is evidenced by the omission of some or all of the key words on one half of the card. The Binocular Reading Test gives an accurate picture of the relative participation or dominance of each eye in a truly binocular situation. (3, 4, 6)

There are certain interrelationships among the factors of eye preference, visual acuity, and reading ability, as we have noted in an earlier article. (3) When there is a definite eye preference, there is a marked difference in the reading of separate eyes in about three out of four cases. Slight differences in visual acuity of the eyes result in marked difference in the reading of the separate eyes in about five out of ten cases. Slight differences in visual acuity result in definite eye preference in about four out of ten cases. Certain defects, such as strabismus, muscle imbalance, etc., almost always cause decided eye preference. Marked defects of acuity are accompanied by decided

eye preference in three out of five cases. Thus, in the presence of a definite eye preference, or marked difference in the visual acuity of the eyes, there is very apt to be different reading skill in the separate eyes. We are interested here in determining how these one-eyed reading abilities compare with two-eyed reading.

The reading of 23 children of marked eye preference was tested by use of separate paragraphs of the Gray's Oral Check Tests for each and both eyes.* The median results were: preferred eye 76.0 seconds, 5.6 errors; non-preferred eye 77.5 seconds, 5.3 errors; both eyes 80.0 seconds, 6.4 errors. In other words, when there was a marked preference for one eye, the best reading was done with this eye, the next best with the other eye, and the poorest reading with both eyes. Among these 23 cases, 43 per cent read significantly better with the preferred than they did with both eyes. Thus, when there is an eye preference, as detected by the Binocular Reading Test, ordinary two-eyed reading tests tend to underestimate the potential reading ability of a pupil. It becomes imperative to discover any tendency to preference of one eye, and to test the reading skill of each eye, if we are to secure accurate measures of a child's reading ability.

The reading of 21 cases who differed in the visual acuity of the two eyes was measured in a similar manner. The median results were: good eye 79.0 seconds, 5.0 errors; poor eye 81.8 seconds, 5.5 errors; both eyes 79.0 seconds, 5.6 errors. When there was a difference in the vision of the two eyes, reading with the stronger eye and both eyes was quite similar. Reading with the poor eye tended to be slower. Again, we have evidence that visual acuity tends to influence reading ability. The major implication of this contrast is that small differences in acuity of the two eyes do not tend to upset the accuracy of estimate of a reading test based on two-eyed reading.

In our population, there were 29 cases who differed significantly in the reading abilities of the separate eyes. All these cases differed more than 7 seconds or 2 errors or both, the median difference found in a population of 55 cases. The median testing results were: best eye 75.9 seconds, 5.0 errors; both eyes 82.5 seconds, 6.8 errors. Thus, when there is a tendency to read better with one eye than the other, the reading with the better eye is very apt to be superior to that done with both eyes. In fact, 55 per cent of those

* Cards for such testing are obtainable from the Keystone View Co., Meadville, Pa.

who were significantly better readers with one eye than the other, read better with this eye than with both eyes. Ordinary two-eyed reading tests are apparently very apt to underestimate the potential reading levels of pupils who tend to read better with one eye than the other. The need for testing reading ability of the separate eyes, in addition to the usual two-eyed test, is obvious.

On the basis of the data offered here, we suggest that the Binocular Reading Test and reading tests of each eye, as well as of both eyes, be given every pupil experiencing reading difficulties. It is important to discover single-eye reading abilities because common two-eyed tests tend to underestimate the potential reading level. Reading with both eyes may actually be inferior to the level achieved by one eye alone. This is particularly true of pupils who, in the Binocular Reading Test, manifest a decided eye preference and of pupils who tend to differ more than the average in single-eye reading abilities. These pupils are very prone to read better with the preferred eye, or the eye more skilled in reading than they do with both eyes.

Estimates of reading ability based on two-eyed tests of pupils who differ slightly in visual acuity of the two eyes are not so prone to underestimation. There is little difference between reading with the stronger eye and both eyes, although reading with the weaker eye is somewhat slower.

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DO THE INTERESTS OF STUDENTS INDICATE THE NEED OF A LIBERAL EDUCATION?

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Editor's note: Stimulated by the war, many colleges and universities workers are examining anew the curriculum of these institutions for dead timber and needed revision. One wishes that such changes as are made may be based upon sound principles and facts. The author presents data on interest as a criterion for chosing subject matter.

IN ORDER to obtain some objective criteria by which the curricula in our institutions of higher learning might be evaluated, considerable attention has been given lately to the measurement of the interests of students. Largely precipitated by the movement known as progressive education and recently galvanized by groups planning for post war education, many American colleges and universities are critically examining their offerings to see if they actually meet the present needs of the student body. Many institutions are now trying to fit the curriculum to the student rather than the student to the curriculum. One of the principal factors behind these efforts to make higher education more functional is a rather widespread belief that students do better work in the courses in which they are interested, than in those required of them. Granting that this movement may be of some value, two questions present themselves. First, are these interests of students relatively stable over a period of time or do they fluctuate with changing conditions? Secondly, are there still a large number of students who possess a relatively well balanced pattern of interests, such that a broad liberal education might be best suited to these students? The present paper presents some answers to these two questions. In order to secure objective evidence, the Allport–Vernon Study of Values test was given to a group of freshman women at the University of Illinois and comparisons of the results obtained are made with results obtained from other groups measured under different conditions.

According to the authors of this test (1), the Study of Values measures "the relative prominence of six basic interests or motives in personality: the theoretical, economic, aesthetic, social, political, and religious." These values are based directly upon Eduard Spranger's "Types of Men," a study which promoted the view that the personalities of men may be determined by a study of their values (7).

The six values are defined in part by Allport and Vernon as follows: 1. *Theoretical*—"The dominant interest of the theoretical man is the discovery of truth." "His chief aim in life is to order and systematize his knowledge." 2. *Economic*—"The economic man is characteristically interested in what is useful." "This type is thoroughly practical and conforms well to the prevailing sterotype of the average American business man." 3. *Aesthetic*—"The aesthetic man sees his highest values in form and harmony." He enjoys beauty for its own sake. 4. *Social*—"The highest value for this type is love of people." "The social man prizes other persons as ends, and is therefore himself kind, sympathetic, and unselfish." 5. *Political*—"The political man is interested primarily in power." He wishes above all else for personal power, influence, and renown. 6. *Religious*—"The highest value of the religious man may be called unity." He seeks to identify himself with the cosmos.

The Study of Values test was given to 96 freshman women enrolled in the Division of General Studies at the University of Illinois.[1] Because of the nature of the prescribed work in the Division of General Studies, students electing this program of study probably constitute a relatively homogeneous group with respect to educational interests.

A summary of the scores made on the Study of Values Test by the sample of freshman women used in this investigation is given in Table I. This table gives the mean scores made on each of the six values of the test, along with the standard deviations of the scores and the standard errors of the respective means.

[1] The Division of General Studies is a four-year program of general education open to both men and women in the college of Liberal Arts and Sciences at the University of Illinois. During the freshman and sophomore years the work in the Division is largely prescribed and consists of seven general courses which introduce the student to the principal areas of knowledge. The courses are Verbal Expression, History of Civilization, Biological Science, Physical Science, Social Science, Literature and Fine Arts, and Psychology and Philosophy. Every student who remains in the Division for a Bachelor's degree must take the first four courses mentioned above and two of the remaining three. These courses are normally completed at the end of the sophomore year, but must be finished by the end of the junior year. After this prescibed work, students in the Division elect a major and minor field of concentration and plan their last two years of work with the approval of the dean in charge. Thus every emphasis possible is given to creating a broad, general education for the students in the Division of General Studies (5).

TABLE I

MEANS, STANDARD DEVIATIONS, AND STANDARD ERROR OF MEANS OF THE SCORES ON THE SIX VALUES OF THE STUDY OF VALUES TEST

96 Freshman Women at the University of Illinois

Values	Mean Score	Standard Deviation	Standard Error of Mean
Theoretical	26.65	7.00	.714
Economic	26.44	6.22	.635
Aesthetic	30.33	8.22	.839
Social	32.73	6.41	.654
Political	30.21	7.02	.717
Religious	34.48	9.51	.970

It may be seen from Table I that the predominant values of the women used in this study are religious and social. Aesthetic and political values are next in order of dominance while the least dominant values are theoretical and economic. An analysis of variance was made on the scores of the test in order to determine whether there were any significant differences between the interests in the six values.

TABLE II*

ANALYSIS OF VARIANCE OF THE SCORES ON THE SIX VALUES OF THE STUDY OF VALUES TEST

96 Freshman Women at the University of Illinois

	Variation or Sum of the Squared Deviations	Degrees of Freedom	Variance
Within the Separate Values	8065.42	570	14.1499
Between the Separate Values	1235.81	5	247.1620

*The figures given are based on transmuted values of the separate scores. Since the scores on the six values are relative to each other, the degrees of freedom might theoretically be less, however, it would not change the results appreciably. Snedecor's F test shows the variance between values to be significant beyond the .001 level.

It may be seen from Table II above that the differences between the scores on the separate values are almost certainly real. Because this lack of uniformity between values might have been due to a large variance in any one of the values, while the others remained relatively uniform, a comparison was made of the mean scores of the six separate values with each other. The results of this comparison are shown in Table III.

TABLE III

THE CRITICAL RATIOS OF THE DIFFERENCES BETWEEN THE MEAN SCORES ON THE STUDY OF VALUES TEST

96 Freshman Women at the University of Illinois

Values	Means	Difference[1]	Critical Ratio
Theoretical–Economic	26. 646—26. 438	.208	.218
Theoretical–Aesthetic	26. 646—30. 333	—3. 687	—3. 037
Theoretical–Social	26. 646—32. 729	—6. 083	—6. 278
Theoretical–Political	26. 646—30. 208	—3. 562	—3. 520
Theoretical–Religious	26. 646—34. 479	—7. 833	—6. 500
Economic–Aesthetic	26. 438—30. 333	—3. 895	—3. 702
Economic–Social	26. 438—32. 729	—6. 291	—6. 898
Economic–Political	26. 438—30. 208	—3. 770	—3. 935
Economic–Religious	26. 438—34. 479	—8. 041	—6. 938
Aesthetic–Social	30. 333—32. 729	—2. 396	—2. 252
Aesthetic–Political	30. 333—30. 208	.125	.113
Aesthetic–Religious	30. 333—34. 479	—4. 146	—3. 234
Social–Political	32. 729—30. 208	2. 521	2. 623
Social–Religious	32. 729—34. 479	—1. 750	—1. 496
Political–Religious	30. 208—34. 479	—4. 271	—3. 539

[1] Negative signs indicate the direction of the difference.

It may be seen from Table III that the mean scores on several of the values differ significantly from each other. Those differences yielding critical ratios of 3.00 or greater indicate rather strongly that they are statistically significant and not due to chance.

It may be inferred from the data presented above, that the women used in this investigation demonstrate some significant differences in interests in the six different values of the Allport-Vernon Study of Values Test. Their interest in theoretical values is significantly less than their interest in all the other values except the economic ones. Likewise, their interest in economic values is significantly less than in all the other values save the theoretical ones. They show significantly less interest for aesthetic values than for religious values, while their interest in political values is significantly less than in religious ones. Their heiarchy of interests ranges from religious values, which are the most preferred, to economic values which are the least liked.

These values are relative to each other, since a "high score in one value can be obtained only by reducing correspondingly the scores on one or more of the other values. In interpreting the results, therefore, it is necessary

to bear in mind that they reveal only the *relative* importance of each of the six values in a given personality, not the total amount of 'value energy' or drive possessed by an individual." (1)

How do the interests of this sample of freshman women compare with the interests of other groups? The comparison of this group with several other groups is shown in Table IV, parts A and B.

TABLE IV[1]

SOME DIFFERENCES IN THE SCORES ON THE STUDY OF VALUES TEST MADE BY DIFFERENT GROUPS

(Part A)

N	Subjects	Theoretical	Economic	Aesthetic	Social	Political	Religious
1163	Men[1]	30.83	32.02	27.04	29.74	32.08	27.96
1592	Women[1]	27.69	27.04	33.04	31.65	27.87	33.31
96	Illinois	26.65	26.44	30.33	32.73	30.21	34.48

[1] Taken from Cantril and Allport (3).

(Part B)

TABLE IV*

N	Institution	Class	T	E	A	S	P	R
380	Wellesley	Freshman	26.5	26.3	31.6	31.0	30.1	34.3
245	Wellesley	Seniors	27.7	24.9	33.7	32.2	25.1	36.1
250	Mt. Holyoke	Seniors	28.6	27.5	33.2	32.3	25.8	33.1
250	Barnes Commercial		26.4	30.8	26.7	31.3	29.5	35.4
90	Stanford		27.4	27.9	36.7	30.4	29.2	28.4
77	Radcliffe		30.4	26.0	34.2	31.4	26.1	32.1
69	Boston Univ. Practical Arts		26.6	28.8	32.0	30.1	31.2	31.1
30	Randolph-Macon	Upper Classmen	26.6	26.9	34.1	31.9	28.5	31.4
27	Wheaton		24.8	26.5	36.8	34.9	25.0	32.0
96	Illinois	Freshmen	26.7	26.4	30.3	32.7	30.2	34.5

*Taken from Cantril and Allport (3).

The scores of the men and women used in Table IV, with the exception of those for the women from Illinois, were published by Cantril and Allport in 1933 (3). These authors point out that "These sex differences are highly significant, and demonstrate unmistakably that aesthetic, social, and religious values play a relatively more prominent role in the personalities of women than of men, and conversely that men are relatively stronger in theoretical,

economic, and political interests." Independent confirmation of these sex differences has been made (6).

The women from Illinois appear to have interests in theoretical, economic, social and religious values quite similar to the composite group of women shown in table IV. However, the group from Illinois appears to differ from the composite group of women with respect to interest in aesthetic and political values. Our freshman women show a greater preference for political values than do the 1592 unselected women, while the preference for aesthetic values is more pronounced in the larger group. Whether these two differences are significant is not known, since the data necessary to determine the significance of differences are not available.

The reason for these differences between our present group of freshman women and this larger group of unselected women reported earlier is not apparent. The explanation which seems most plausible is that the unselected women are not homogeneous samples. The large group of women was comprised of women students from several different classes within these institutions. It has been shown by Cantril and Allport (3) (see Table IV Part B) that the interests of women vary somewhat among different institutions and at different levels of educational development. Furthermore, Burgemeister (2) found considerable initial variability among the interests of college students. Thus it seems quite probable that this large sample of 1592 women may be simply a group of sub-samples, each with its own characteristic interests. Therefore, the differences observed between our group of freshman women and this large group of women may be due to the differences in composition of both.

TABLE V

A COMPARISON OF THE SCORES ON THE STUDY OF VALUES TEST MADE BY FOUR GROUPS OF FRESHMAN WOMEN

N	Institution	Theoretical	Economic	Aesthetic	Social	Political	Religious
380	Wellesley[1]	26. 5	26. 3	31. 6	31. 0	30. 1	34. 3
180	Barnard[2]	28. 25	24. 94	34. 33	31. 44	31. 51	31. 92
108	Sarah Lawrence[3]	25. 79	26. 56	33. 89	30. 48	31. 94	30. 91
96	Illinois	26. 65	26. 44	30. 33	32. 73	30. 21	34. 48

[1] Data from Cantril and Allport (3)
[2] Data from Burgemeister (2)
[3] Data from Duffy and Crissy (4)

Table V presents a comparison of the results of four different freshman classes of women on the Allport-Vernon Study of Values Test.

From Table V it may be seen that the freshman women at Wellesley and Illinois have less interest in aesthetic values and more interest in religious values than do the freshman women at Sarah Lawrence and Barnard Colleges. With the exception of the two values noted above, there is considerable similarity in the interests of these four classes of freshman women. All four of the groups surveyed were enrolled in programs leading to the degree of Bachelor of Arts or Bachelor of Science. Since the women studying in these institutions are all enrolled in programs of liberal arts and sciences, such similarity of interests might be expected. The similarity is especially interesting in view of the fact that these colleges represent different socio-economic backgrounds and since the students were measured at different periods of time. Perhaps the chief determinant of interest in this case is the relatively homogeneous desire of the students for a liberal education.

From table VI presented below, it may be seen that different occupational groups tend to have characteristic patterns of interest which distinguish them from each other. Frequently, the most conspicuous feature of these patterns is the extreme dominance in each occupational group of a single interest. For example, the group of students majoring in literature have a much higher average interest in aesthetic values than does any other group shown in table VI.

TABLE VI

SOME OCCUPATIONAL DIFFERENCES IN THE SCORES ON THE STUDY OF VALUES TEST

Illustrative Occupational Differences	T	E	A	S	P	R
26 students of science (male)	34.3	28.5	28.6	29.4	33.4	25.8
64 students in engineering	32.0	35.1	26.1	29.0	31.4	26.4
125 commercial students (male)	32.2	34.5	21.9	28.7	31.8	30.9
81 salesmanship students (male)	27.1	38.3	24.2	26.8	36.4	25.5
51 students of law (male)	26.0	30.3	28.0	30.7	37.1	27.6
24 students of literature (female)	23.7	27.2	40.2	29.4	29.5	30.1
80 missionaries (both sexes)	27.0	23.0	26.3	35.0	21.8	48.9
26 Boy Scout leaders	31.6	32.6	21.5	32.3	28.5	33.5

[1] Data from Allport and Vernon (1)
[2] T—Theoretical E—Economic A—Aesthetic S—Social P—Political R—Religious.

What are the implications of these occupational differences in interests? In the first place, it is rather evident from Table VI that there is a tendency for specific occupational groups to demonstrate pronounced dominance of

interests in the values which are most closely associated with their particular occupations. For example, the highest score made by the eighty missionaries included in the table was in the religious value. It is clear from an analysis of these specific occupational differences in interests, that each occupation tends to be characterized by an interest pattern peculiar to itself; that is, one which is not commensurate with the pattern of interests of the unselected populations from which the norms of the test were obtained. While some of the differences noted for the groups of students in Liberal Arts and Sciences reported in this study are no greater in degree than those for certain more specific occupational groups, they do agree rather well in the types of interests held most predominantly.

While it was shown in the first part of this paper that the women used in this investigation differ in their major interests on the Allport-Vernon Study of Values tests, such differences seem to be reasonably consistent with the scores of women students enrolled in other institutions of Liberal Arts and Sciences. On the whole, their predominant interests seem to be in religious, social and aesthetic values, while their least preferred values seem to be the theoretical, economic and political ones. Such small difference in patterns of interests which individual institutions do present, are generally not significant. It would seem, therefore, that students who seek a liberal education, have a pattern of interests common to themselves, and one which is relatively stable over a period of years. Further evidence of the stability of these interests is presented by Burgemeister (2). The main features of this pattern seem to be the relative equality with which the interests in the various values are distributed. While it is true that some statistically significant differences of interest have been demonstrated, these differences are relatively small in terms of the types of difference actually necessary to indicate marked preferences in one value or another.

It is the opinion of the present writer, therefore, that a curriculum of liberal education has a definite place in our American universities. Furthermore, such a curriculum should not overlook the value of courses directed at religious and moral training, as is so frequently done at the present time, because repeated measurement of the interests of women students indicates that these students have a definite interest in religious values. Since religious values have a broader connotation than is usually given to them, such courses should involve the development of a definite system of ethical conduct and

a constructive moral philosophy of life. Special curricula can and doubtlessly should be established for those students whose interests lie in specific vocational fields, but to vocationalize what we now know as liberal education would most certainly defeat the purpose for which vocationalizing is usually suggested, namely that of fitting the curriculum to the student, for there are quite a few students whose major interests are about equally distributed in the major fields of knowledge.

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EDITORIAL

CRITICISMS AND EXPECTATIONS OF EDUCATIONAL RESEARCH

THAT the highest possible quality in research is desirable may be taken as axiomatic. That this high quality can be had for the wanting is idle fancy. That high quality will rise up in response to sweeping criticisms of present and previous research is not to be expected. For the essential problem lies not in the acceptance of high quality as a generalized goal, but rather in the understanding of what high quality means in each kind of research undertaking, and in a knowledge of the steps necessary to bring that quality into being.

There are distinctive differences between the criticism offered by those who have been engaged in research as a life-long pursuit and that which is offered from those who perceive for the first time that research has not provided conclusive answers to many fundamental questions. Writers in the latter group are likely to reflect the perturbance which comes from applying idealistic standards to the practical endeavors of others. While still in a state of shock at the variance between their perfectionist dreams and the actual accomplishments of their colleagues, they may proceed to condemn beginners for trying, learners for failing to achieve mature performance, and even leaders for being tied down by limitations of human nature. They are disappointed with research workers generally. The world ought to be much better than it is!

A more stable perspective requires that we begin our thinking with human beings as they are. Where are the supermen who will remedy all the deficiencies of educational research by doing things as they should be done? And how would these come by their great abilities if not by making many mistakes as they repeatedly try to learn how to do better? The human race is where it is because it is human; superhumans would have done much better, subhumans much worse.

Research is the hardest task to which man has set his mind. The achievement of a desirable degree of penetration calls, not for years, not for a few

generations, but for centuries. Physical scientists have been at the task for some three hundred years and are still seeking understanding. Any belief that research workers in a new field of knowledge can, by simple volition, achieve a satisfactory quality of work runs counter to the combined experience of research workers in all fields of endeavor. The clear definition of problems, the identification and isolation of significant variables, the assessing of quantities and values, and the flawless execution of investigative processes are all ideals that responsible research workers know about and care about; but the realization of such objectives is something which can come about only through successive stages of approximation, noramlly requiring many generations of earnest effort. Good progress will come, not through open disparagement of those who try, not through a sharp reduction in the numbers of those who are attempting to make good at the task, but through a tremendous aggregate of effort accompanied by continual interchange of insight and mutual encouragement.

The writer has been closely associated with some who are wont to decry the general run of research material. "There is too much tripe published. Better that three-fourths of the material were discarded instead of being put in print. Educational research should concern itself with important things." The trouble with such a point of view is its sheer unrealism—its utter lack of willingness to see the world as it is. It assumes so many things which, on examination, are seen to be false constructs.

We may note first the mistaken concept of importance, the idea that it is an inherent quality. What seems worth finding out to one person is not at all worth while to another. Worth-whileness is not something absolute which inheres in a problem; it is rather something extrinsic which inheres in the relationship of the problem to a developing scheme of thought. It is a dependent and highly variable quality. It depends in part on the answer found: an answer of one kind may be of the greatest importance, of another kind, of no lasting importance whatever. And the answer to a simple question usually seems of far less importance than it did before we knew it—for we quickly frame the next question and turn attention to it, whereas a short time before, the answered question loomed as the chief obstacle to all further progress. The importance of a question in research depends on its contribution to thinking; and often its main contribution is through helping the worker to see that he is on the wrong track.

The fundamental point is that we cannot judge the importance of problems or findings in advance, and often not until many years later. We cannot tell when some active mind, bent on a fruitful line of thought, will be aided by some stray fact turned up by an obscure research worker.[1] Research is to a significant degree cumulative, and we do not know in advance what form of structure a given fact will be fitted into at some later time by a mind that is ready to think.

When Galileo watched a church light swinging and wondered if the swings all took about the same time, was that an important question? Who thought so at the time? Even Galileo did not realize a hundredth or a thousandth of its importance then. When Michelson saw the feathers on a pigeon's neck give forth different colors as they moved, was that an important problem? He did not know; he was only curious. When early mathematicians were asked to help on problems of probability (gambling) they were ashamed to have their work known. Nobody then was prepared to regard it as an important contribution to theory. Mendel could not get interest in his conclusions on inheritance; of what importance were such ideas? The great contributions to science have come mainly from work on problems whose importance was not dreamed of until after the discoveries had been made.

For us to talk about the importance of research problems as though it were something which could be prejudged is simply to ignore the long-time lessons from the history of scientific endeavor in fields more mature than our own. It may be granted that many of our Master's thesis studies are repetitious, and that many others are, in themselves, trivial. But we do wrong to look at them by themselves; we should see them as parts in a gradually developing frame of thought. That the problems attacked in education are characteristically more trivial than those attacked in other fields, the writer does not believe; he has been amazed at what would pass for a Master's or Doctor's problem in physical science fields. The beginners in those fields do no better than the beginners in our own work; but often the directors have the vision to see that all knowledge may be important—how important cannot immediately be known.

[1] This argument suggests the importance of thorough indexing, reviewing, and summarizing of research studies in order to make pertinent findings widely available. With such bibliographical and reporting services the writer is wholeheartedly in sympathy.

The difficulty of judging the worth of even well outlined projects advanced by mature scientists is frankly recognized by one of our large foundations in a recent report:

> The Rockefeller Foundation is grateful that it was able to play a part in the discovery of penicillin, just as it is happy for the opportunity which it had to help in the early development of the sulfonamide drugs. But financial support is by far the least important part of the advance in knowledge. Creative ideas, trained men—these of course, are basic and fundamental. The best that a foundation can aim to do is to put its support in the right place, at the right time. . . .
>
> That this function requires knowledge and imagination on the part of foundations is not to be denied. And mistakes are inevitable because human judgment is frail. Perhaps the mistakes are due in considerable degree to lack of what might be called a clairvoyant kind of imagination. So often a new germinal idea runs completely contrary to accepted opinion; it violates all the canons of current scientific thinking. One wonders what would have been the answer of a foundation to Louis Pasteur if he had applied for aid in the development of his strange conception that the process of fermentation and the process of infection are related. Or what assistance from any responsible foundation could Madame Curie have obtained during those years when with her own hands she shoveled tons of pitchblende in that old shed in the Rue Lhomond? To detect genius when it appears, to distinguish between fundamental ideas that are struggling to be born and those that have already safely arrived, to be able to discriminate between the significant and the trivial—this is the difficult, indeed the almost impossible, standard by which those who would assist in extending the frontiers of knowledge must measure themselves.[2]

Back of the attitude referred to earlier there seems to be some notion that if we eliminated the studies which do not immediately carry thought forward better ones would somehow take their place. Practical schemes for accomplishing this result are desirable, but the idealists don't think in terms of mechanisms. Neither do they consider the effect of their proposals on the recruitment of the next generation of workers. Such neglects are encountered in various quarters. Not long ago a number of mathematical statisticians were deploring the low quality of articles published in mathematical and statistical magazines. Errors in reasoning occasionally occurred; ideas known to older workers were often rediscovered and published through

[2] Raymond B. Fosdick. *The Rockefeller Foundation, A Review for 1943*. New York: The Rockefeller Foundation, 1944, pp. 12–13.

historical ignorance; the articles did not make fundamental contributions. Something ought to be done about it. The space could be used for better purposes. Immature writers should not try to write mathematical articles. No one has the right to make errors in mathematical thinking: it should be perfect. Committees should be set up to guard against such imperfections in mathematical publications.

These mathematico-statistical gods are perhaps sufficiently removed from most mortals so that they can be forgiven for seeing with one eye already fixed on some Pythagorean paradise where number is everything and human beings don't count. The rest of us, however, are expected to think in practical terms. If the editors and editorial boards and the professors who encourage and supervise the writing of novices do not detect the flaws in the manuscripts before printing, where are the infallible judges who will do this job? And if competent censors could be found who were not already too busy, the net result would probably be that we should receive issues of magazines filled with blank pages. For censors cut out, they don't create; and their psychological power to kill extends far beyond the range of their blue pencils. Their functioning existence would wither many an intention to write before it ever took form. And the censorious lords of perfection who would know all, see all, and damn all in the realm of shortcomings would go down in history as the last of their kind, for without hope and encouragement and opportunity for gradual growth no generation of specialists could rise to fill their places.

Quality in research cannot be attained through wishing or willing it. Quality comes with training and experience. Let us therefore seek to increase the opportunities for training and for getting graduated experiences. This means, for one thing, articles published which young readers can read with understanding, because the allusions are on their level of understanding. It also means articles simple enough so that some young readers will feel that they can do as well or better themselves, and will be encouraged to try it. It means further that the young writers will have many opportunities for trying themselves out, and for growing in self-expression through repeated trials, some successes, some errors, and continued encouragement. The accuracy and fundamental character of such articles are definitely secondary considerations. Our magazines must, and should, be places in which beginning research workers try themselves out. May we always have plenty of magazines with their doors open for this purpose.

We so often assume miracles, as though research workers sprang into existence fully matured, like Athena's from the head of Zeus; or as though they were machines, or some nonhuman organism, whose intellectual abilities were their only phase of existence, and whose emotions could be ignored. Yet the cultivation—socially, intellectually, and emotionally—of these young workers is more important to continued research than are our own best efforts.

The present writer does not think that educational research is all that it could be; nor does he mean to imply that research should be without criticism, but only that the background of expectations from which the criticism springs should be reasonable. He has little sympathy with the criticisms which spring from impatience, growing out of an utter lack of historical perspective; or with those which originate in idealistic conceptions of what the world ought to be like, with a total disregard for reality. There have been thoroughgoing critical reviews of educational research,[a] and these are a service. We need more. It would be dangerous for the future of our work if a continuous ferment of dissatisfaction were not maintained among research workers. But let the criticisms come chiefly from those who understand what research is like, and what can reasonably be expected of it. And let the criticism carry some stimulation aside from simple condemnation; let it often be a sharing of a large vision, with some expression of confidence in those who are doing their best to make educational research what it ought to be.

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REVIEWS

Address books to be reviewed and other communications to A. S. Barr, Department of Education, University of Wisconsin, Madison 6, Wisconsin.

ROWE, CLYDE EUGENE, *The Writing of Infrequently Used Words in Shorthand*. New York: Teachers College, Columbia University, 1943.

One of the most difficult elements in teaching or writing shorthand is that of writing outlines for unknown or unfamiliar words that have not been studied. Since it is impossible to teach students all the words in the language, insight into methods of teaching students to handle this problem better should be of great value. This study attempted to reveal some of the characteristics of the writing, by students, of infrequently used words in Gregg Shorthand.

The procedure involved the use of a questionnaire to over 200 students, asking them to write a set of sentences involving infrequently used words, and to report where they paused and why. It included also, the use of a machine called the Scriptocron which measured in sixtieths of a second the time taken to write the outlines, and a series of high speed moving pictures of the writing.

The findings, which were based upon careful statistical procedure, with well determined reliability and measures of significance, were that students are conscious of hesitations but not too sure of the exact point of hesitation; that students are much more inaccurate in writing infrequent words than frequent ones; that the pausing time before starting a shorthand outline is significantly greater for infrequent words than for frequent ones; that the writing time per stroke is greater for infrequent words than for frequent ones, that there is a transfer from frequent forms to infrequent ones in about 40% of the cases, and that the general pattern for writing infrequent words seems to be one of hesitation before and during the writing, with piecemeal writing of the outlines.

Reasons for these reactions could not be determined, but it seems probable that improvements in learning to write outlines for unfamiliar words might be achieved by more attention to transfer, to writing by syllables rather than by single outlines, to providing some type of clue or standard procedure for attacking unfamiliar words, to decreasing the pauses between words and to increasing the speed or writing the outlines, once they have been mentally decided upon by the student.

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MONROE, WALTER S., *Encyclopedia of Educational Research*. New York: The Macmillan Company, 1941. Pp. xxiii + 1344.

Research workers in education and serious students with specialized interests will welcome this compilation of information based upon nearly 100,000 individual studies. Critical evaluation, synthesis and

interpretation of researches on a multitude of topics are contributed by two-hundred-odd workers under able editorship.

Liberal cross-indexing makes it possible to locate special topics under familiar titles. In several cases, as in *Child Development, Colleges and Universities,* and *Rural Education,* lengthy discussions are presented as a series of articles on subtopics. Bibliographies are necessarily selective, but they furnish good starting points for the student with specialized interests.

In foundation areas, as in *Leadership, Learning,* and *Higher Mental Processes* the educational implications are disposed of rather briefly and very conservatively. In general the critical evaluation of research is implicit in the selection of studies reported rather than explicit in statements made by the contributors. Needed research is referred to in many areas. In this respect the Encyclopedia should furnish a valuable guide to the selection of doctor's thesis problems and be of material assistance to the mature investigator in education. The suggestions are, however, sometimes rather general, as in *Industrial Education.* "The greatest need seems to be in the areas of method, physical equipment, teacher selection and training, curriculum and course planning, finance, and administration . . . Much study is needed to solve the problems of the effective coordination of these factors." In contrast with the foregoing are the very helpful research suggestions in many other cases as in *Colleges and Universities, Methods of Teaching.* "Proficiency examinations as a substitute for regular class work in granting academic credits. Deviation from the four year unit in order to adjust the time to the student's need and abilities. Emphasis on fields or divisions of learning as a means of stressing relationships between departments."

There is a disappointingly brief treatment of *Methods of Teaching,* possibly indicating lack of much fundamental research in this important field, except in the subject matter areas. Accompanied by an equally inadequate treatment of *Learning* and *Motivation,* the defect is all the more serious. By contrast, the section on *Visual Education* is filled with helpful teaching suggestions. *Radio Education* is treated as a broadcasting problem in practically all reported research; the method of using the radio in classroom learning activities has apparently received no consideration by investigators.

The researches on *Reading* should prove of great interest to research workers and teachers on all school levels. 1951 scientific studies on reading have been made since 1880, more than ¾ of them since 1920. The earlier studies were largely laboratory investigations of the psychology and physiology of reading. Current investigations include problems that arise before a child enters school, that command attention at various age levels up to and including the college level. Problems are being studied that have their origin in the home, the library and adult life as well as the school. Important limitations of the studies are their fragmentary character, lack of coordination among research workers, inadequacy of controls, and use of outworn concepts of learning.

The Psychology of Arithmetic has been concemed far more with studies on computational skill than quantitative thinking. Curriculum and Methods researches in the field of *Arithmetic* have also been concerned more with computations than with arithmetical reasoning. The contribu-

tor estimates that more than 1100 studies have been made on arithmetic. *Secondary Mathematics* has been studied less extensively. Some needed studies are listed. Apparently investigators have been concerned more with formal problems of content and method than with the functional aspects of mathematics on both elementary and secondary levels.

The volume is not a general encyclopedia of education, but it does include a multitude of topics on which there has been a sufficient body of research to justify an article. The *Review of Educational Research,* to be published by the American Educational Research Association each three years, will continue to bring significant new studies to the attention of research workers. The editor and his coworkers are to be complimented upon the production of a work of reference which should be of great value in stimulating and coordinating research as well as in giving information which may be applied to educational practices.

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Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Education of Children in the Families of Agricultural Migratory Workers.—The Office of Education has cooperated with the Children's Bureau, Department of Labor, in a study of the economic, social, and educational welfare of children of agricultural laborers in a report just issued by the federal government. The study was carried on among these workers, chiefly of Mexican origin, in Hidalgo County located in southern Texas.

The findings are discussed under five headings: family life, work of the children, schooling of the children, homes, and health of the children and conditions affecting their health. In regard to the schooling of the children, it was learned that, because of the pressure of poverty and similar social and economic factors, a large proportion of the young people between 6 and 18 years of age were employed at least part of the year and either did not attend school or attended for only a short period of time. More than one-fourth of the children aged 6 to 19 years and four-fifths of those between 10 and 14 had been out of school at some time within the preceding year. Nearly all the boys and girls 14 years of age and over were regular members of the family working force. While the younger children usually worked in cotton picking in the summer and fall months, only the older boys and girls generally worked in the fields throughout the year whenever work was available and regardless of whether school was in session.

Of the 837 boys and girls between the ages of 6 and 16 years who were studied, not quite three-fourths were currently enrolled in school; nearly one-fifth had never been enrolled in schools. Few children enrolled before they were 7, the age at which compulsory school attendance begins in Texas, and a considerable proportion waited until they were 8 or 9 for reasons such as lack of clothing, the school's refusal to accept some children 6, 7, or 8 years of age, and the attitude of some parents that children of this age were "too young" to attend.

The total schooling of the children enrolled was reduced by late entrance in the fall, early withdrawal in the spring, and frequent absences for work during the year. So limited was the children's opportunity to go to school that normal grade progress was impossible. It was found that nine-tenths of the boys and girls from 6 to 17 years of age *who had been to school* were overage for their grades by 1 to 8 years.

The main reasons, in order of frequency of occurrence, for non-enrollment in school were:

Work.
Parent considered child too young.
Needed at home.
Lack of clothing.
Unsatisfactory school adjustment.

School refused to admit child.
Illness or mental or physical handicap.
Mobility of family.

The main reasons for absence due to late enrollment in the fall or early leaving in the spring and for absence during the year were:

Work.
Moving from one work area to another.
Sickness.
Children too far from school facilities.

Of significance are the figures of the last grade attended by 133 children of these families who periodically migrated with the crops; these young people were 16 or 17 years of age and were presumably finished with their schooling. These figures show that 39 percent were in the first or second grade when last attending school and that over 80 percent were in one of the first 4 grades when last attending school.

Last grade attended	Number	Percent distribution
1	28	21.0
2	24	18.0
3	19	14.3
4	36	27.1
5	17	12.8
6	4	3.0
7	2	1.5
8 or over	3	2.3

Of equal interest are the figures for the age-grade placement of 747 children, ages 6 to 17, from this same type of family, who either were in school at the time of this study or who had attended school at some previous time. The evidence shows that there is little relation between the age of the pupils and the grade in which they are found.

Age-grade status	Number	Percent
Underage	1	.1
Normal	76	10.2
Overage	670	89.7
1 year	112	15.0
2 years	187	25.0
3 years	153	20.5
4 years	115	15.4
5 years	66	8.8
6 years	23	3.1
7 years or over	14	1.9
Total	747	100

The full report is entitled "The Work and Welfare of Children of Agricultural Laborers in Hidalgo County, Texas," and is issued by the Children's Bureau, U. S. Department of Labor as their Publication No. 298.

Encyclopedia of Child Guidance.—This encyclopedia was edited by Ralph B. Winn and published in 1943 by the Philosophical Library of New York City at $7.50. Some fifty psychiatrists, educators, and social workers collaborated in the preparation of the volume. Most of the articles are initialed to identify the author.

Dictionary of Sociology.—The Philosophical Library of New York City published early in 1944 a *Dictionary of Sociology* ($6.00), under the editorship of Henry P. Fairchild of New York University with Earle E. Eubank of the University of Cincinnati as associate editor and the collaboration of approximately one hundred other sociologists. Most of the definitions are initialed by the author responsible.

National Society for the Study of Education.—The yearbook for 1945 will consist of two volumes devoted to the consideration of educational problems as now visualized in relation to anticipated needs

of the postwar period. Ralph W. Tyler is chairman of the committee preparing Part I of the yearbook, which deals with problems of curriculum readjustment in the light of current forecasts of changes in the functions and clientele of the schools. Bess Goodykoontz is chairman of the committee preparing Part II, which deals with the structural organization of the educational system in relation to the services the schools will be expected to perform. W. W. Charters is serving as a member of both of these committees, with the special responsibility of insuring the appropriate co-ordination of the programs outlined in the two volumes.

Carnegie Foundation.—Danger of postwar regimentation of the American college is foreseen by Walter A. Jessup, president of the Carnegie Foundation for the Advancement of Teaching, in the thirty-eighth annual report of the Foundation:

"At the moment, proposals for federal support of education, elementary, secondary, and higher, federal support of students, secondary and collegiate, federal support of scientific research and libraries —all are now receiving considerable acclaim. There is perhaps an even chance, or better, that these proposals will find much favor in a nation regimented for war. Whether for the human spirit the gain in added efficiency and simplified economy will outweigh the loss in individual initiative and freedom to make mistakes, only time can tell. At any rate, the American college, in its free evolution as an implement of society, has now reached a stage when perforce it is governed by society's need and not by its own free choices. The prime question is whether our intellectual future shall be immobilized at a planned efficiency or free.

"It is open to question whether such a controlled program would make so great a contribution to our American life as has the looser but freer program of the American college. American higher education has long been characterized by hard-won freedom—freedom on the part of the student to choose a college to accord with his personal preference, freedom to enroll in courses of his own choice, freedom of the instructor to teach largely as he himself wishes, and freedom on the part of the institution to engage in endless experimentation. This spirit has characterized all of our higher institutions from the oldest and most powerful to the youngest and most limited. Nowadays, the dictates of total war have removed from college life and learning almost all free choice and free decision. College officers, teachers, students, plants are assets of the state; and as such they are expected to 'come through.' "

William S. Learned, staff member, discusses post-war measures needed for judging the intellectual achievement of the individual college student:

"The final evaluation of a student's educational attainment deserves the most critical study of any problem that confronts a faculty. In its adequate discharge a staff of teachers will accumulate more wisdom as to the precise nature of the process before them than in any other aspect of the undertaking. The available aids, such as test scores, are important and should certainly be included as showing the scope of a student's equipment or lack of equipment in all significant fields, and in pointing up comparisons with appropriate norms.

"But the core of the matter lies elsewhere. Nothing can take the place of a considered, carefully confirmed and

worded estimate of a board of experienced teachers, in view of all the evidence. This should contain no meaningless phrases. It should describe as exactly as possible in educational terms the demonstrated abilities of the student, where they lie and of what nature they are. His limitations and their compensations, if any, should be clearly set forth. Marked gains or changes over the entire curriculum period should be pointed out. Clear evidence of special powers as seen by the mature observer should be emphasized. Honors ratings or classifications should be equally specific in their scope of reference. Such a document should present the mirrored image of the student in regard to defined educable traits which the faculty considers important and should be intelligible both to the student and to any competent inquirer. If skillfully done, it should prove of the greatest value to the student and should afford the college at least the satisfaction of a task completed in the terms and spirit in which is was undertaken."

Deans of leading American graduate schools commend to colleges the Graduate Record Examination of the Carnegie Foundation as taken by students before admission to graduate work:

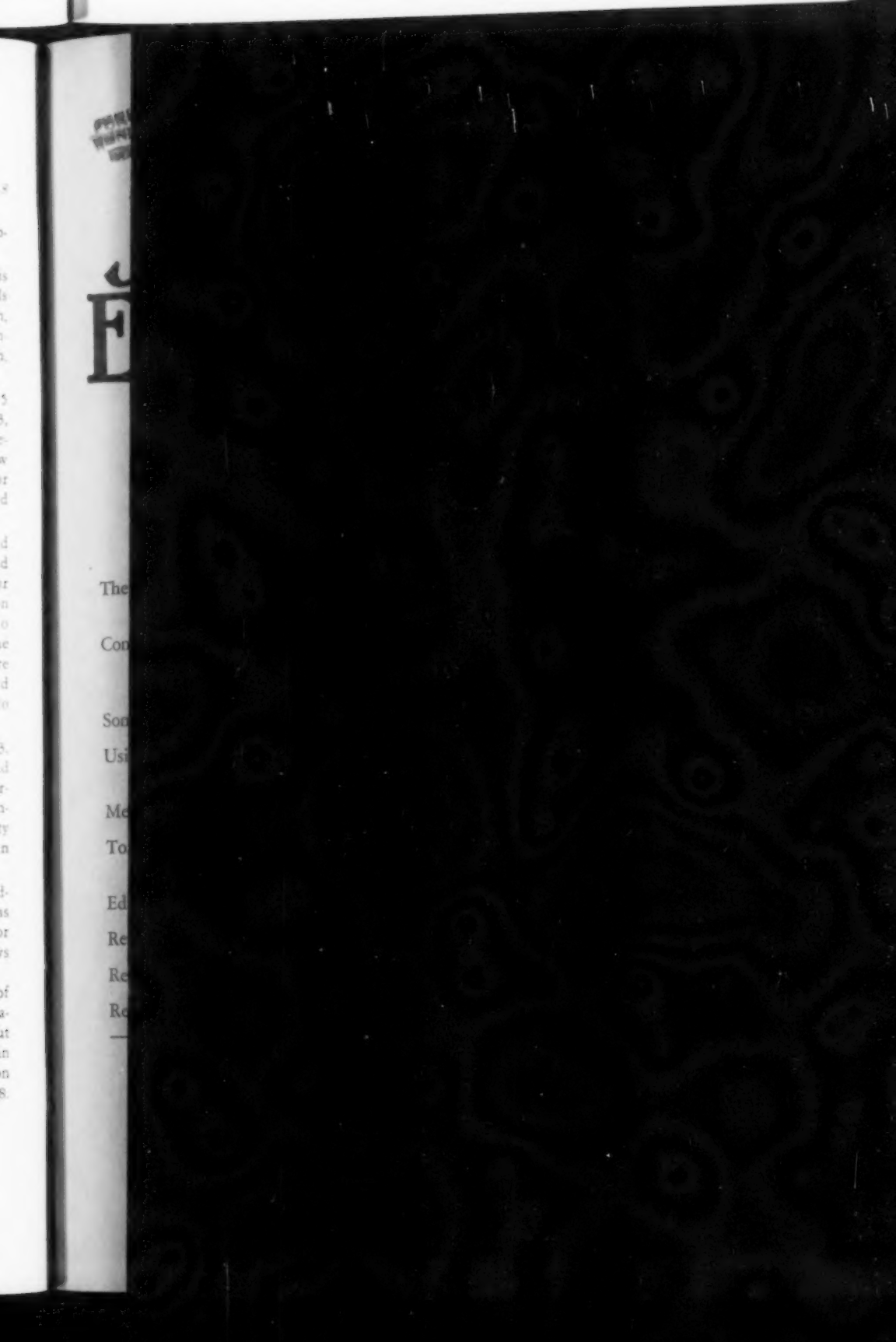
"We who have used these tests are impressed by their value in assisting in the classification of candidates for admission as graduate students, and of applicants for scholarships or fellowships, as well as their value to the students themselves in revealing relative strength or weakness in intellectual equipment. We shall welcome in our respective graduate schools the submission of Graduate Record Examination scores by any student applying for scholarship aid or for admission, since these records convey valuable information about the students submitting them."

The deans thus indorsing this new basis for admission head the graduate schools of the following universities: Brown, Columbia, Harvard, Iowa, Michigan, Minnesota, Princeton, Rochester, Wisconsin, Yale.

War has had its effect upon the 15 research projects carried on, 1942–43, under the co-operative agreement between Carnegie Corporation of New York and the Carnegie Foundation for the Advancement of Teaching initiated in 1924.

Of these projects three were carried on in the Foundation's own offices, and 12 were pursued by other agencies or institutions. The Carnegie Corporation provided funds for all 15 projects. No new projects were begun during the year. Many of those under way were adapted to wartime needs of the armed services and governmental agencies to further the war effort.

During the year ended June 30, 1943, a total of 87 distinguished scholars and teachers died while in receipt of retiring allowances from the Carnegie Foundation. Of these, five were over ninety years of age and twenty-eight were in their eighties.

The Carnegie Foundation for the Advancement of Teaching since 1905 has disbursed more than $44,424,600 for 3,632 retiring allowances and widows pensions.

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